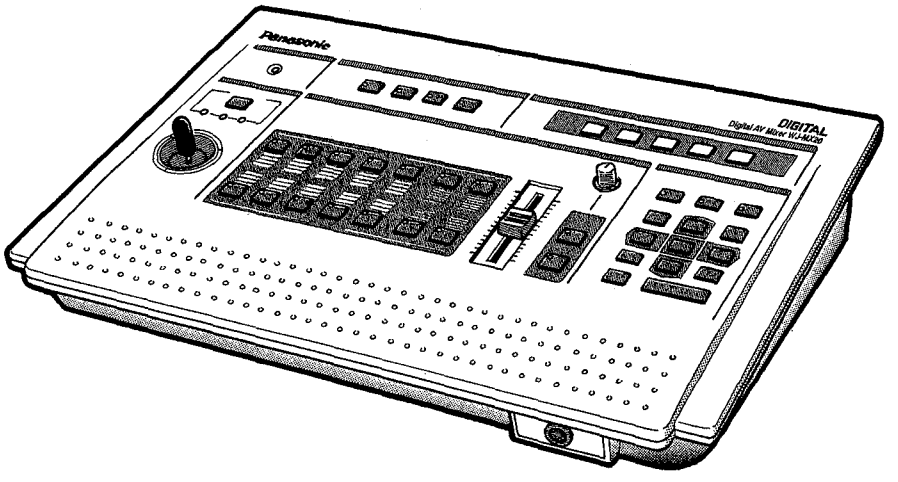
Service Manual

Digital AV Mixer

WJ-MX20



SPECIFICATIONS

Source Input :	x4 (SOURCE 1/4)
Video Input :	1.0 V[p-p]/75Ω PAL composite signal, BNC connector
Y/C input:	Y signal : 1.0 V[p-p]/75Ω, C signal : 0.286 V[p-p]/75Ω Mini Din 4-pin connector
Audio Input :	–6 dBs 20 kΩ pin jack (L/R)
Character Input :	x1 (TITLE) ; 10-pin connector for optional Character Generator WJ-KB30
Recording Output :	x1 (REC OUT)
Video Output :	1.0 V[p-p]/75Ω PAL composite signal, BNC connector
Y/C Output :	Y signal ; 1.0 V[p-p]/75Ω, C signal ; 0.286 V[p-p]/75Ω Mini Din 4-pin connector
Audio Output :	–6 dBV/1 kΩ, pin jacks (L/R)
Preview Output	
Video Output :	1.0 V[p-p]/75Ω PAL composite signal, BNC connector
Back Color :	White, Yellow, Cyan, Green, Magenta, Red, Blue,Black and Useable
Wipe Patterns :	298 patterns
Video Gain :	Unity
S/N (typical) :	Video 45 dB (composite), 45 dB (Y/C)
	Audio ; 60 dB
Power Source :	220 - 240V AC, 50 Hz
Power Consumption :	Approx. 19W
Ambient Operating Temperature :	0°C - 40°C (32°F - 104°F)
Ambient Operating Humidity :	Less than 90%
Dimensions :	420 (W) x 300 (H) x 88 (D) mm
Weight :	2.5 kg

Weight and dimensions indicated above are approximate.
Specifications are subject to change without notice.

Panasonic

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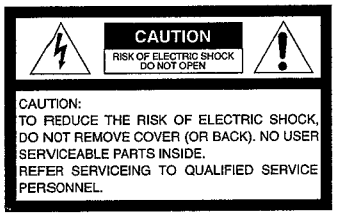
⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.



This symbol warns the user that uninsuland voltage within the unit may have sufficient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any inside part of this unit.

This symbol alerts the user that impotant literature concerning the operation and maintenance of this has been included. Therefore, it should be read carefully in order to avoid any problems.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are indicated by the ⚠ mark on the schematic diagram and the replacement parts list. It is essential that these critical parts should be replaced with manufacture's specified parts to prevent shock, fire, or other hazards.
Do not modify the original design without permission of manufacture.

Standard Accessory

Power Cord	1 pc.
RS-422 Connecting Cable	1 pc.

Optional Accessory

Character Generator	WJ-KB30

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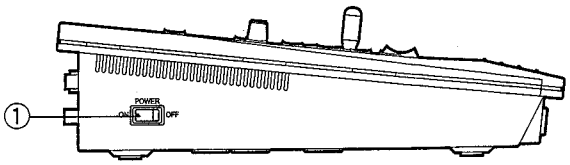
MAJOR OPERATING CONTROLS AND THEIR FUNCTIONS

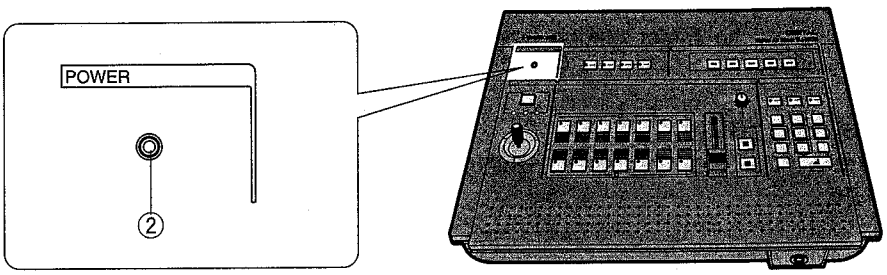
■ Side View

(1) Power Switch (POWER ON/OFF)

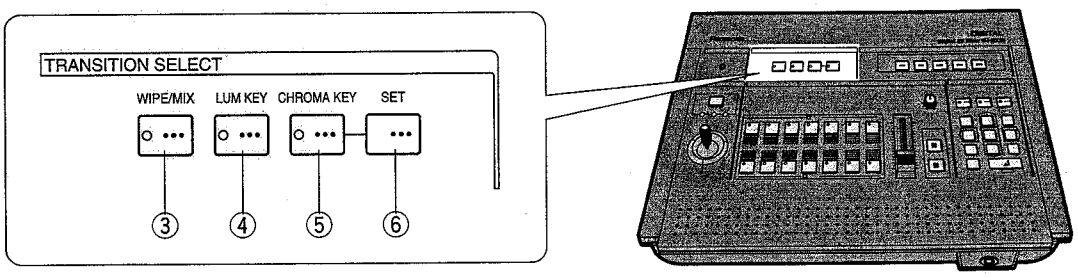


■ POWER Section

(2) Power Indicator



■ TRANSITION SELECT Section



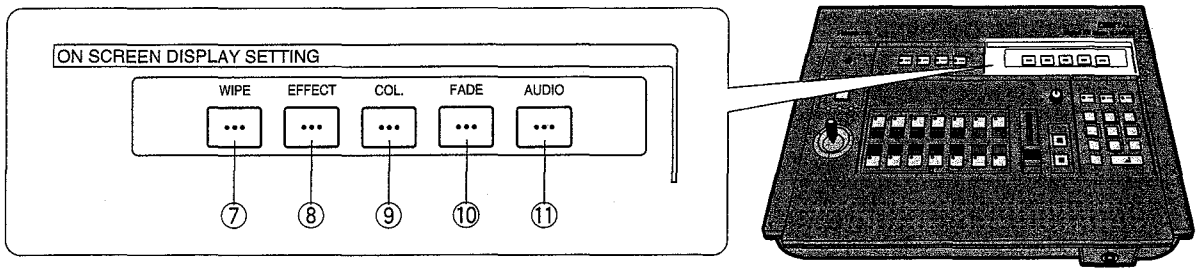
(3) Wipe / Mix Button (WIPE/MIX)
Used to select either Wipe or Mix Effect.
Lit : Wipe selected
Blinking : Mix selected

(4) Luminance Key Button
Used to replace certain luminance of one picture with that of another picture.

(5) Chroma Key Button
Used to replace certain colour of one picture with that of another picture.

(6) Set Button
Used to select a colour or colours to remove using the chroma key.

■ ON SCREEN DISPLAY SETTING Section



(7) Wipe Button (WIPE)
Used to display the Wipe menu on the preview monitor.

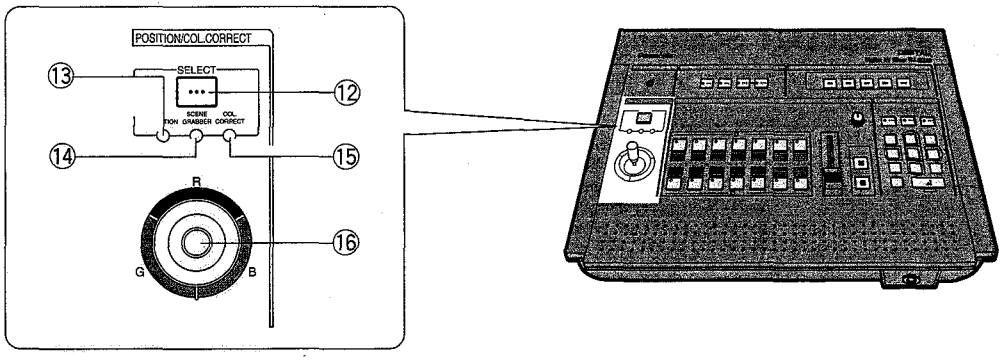
(8) Effect Button (EFFECT)
Used to display the Effect Setting menu on the preview monitor.

(9) Colour Button (COL.)
Used to select the colour for the back colour or the wipe edge.

(10) Fade Button (FADE)
Used to display the Fade Setting menu on the preview monitor.

(11) Audio Button (AUDIO)
Used to display the Audio Setting menu on the preview monitor.

■ POSITION/COL. CORRECT Section



(12) Select Button (SELECT)
Used to select POSITION, SCENE GRABBER or COL CORRECT.
Notes :
1. Scene Grabber is available with the ▣ pattern.
2. Colour correction is selected when the CHROMA ON mode is selected and the desired Effect Output Button is pressed.

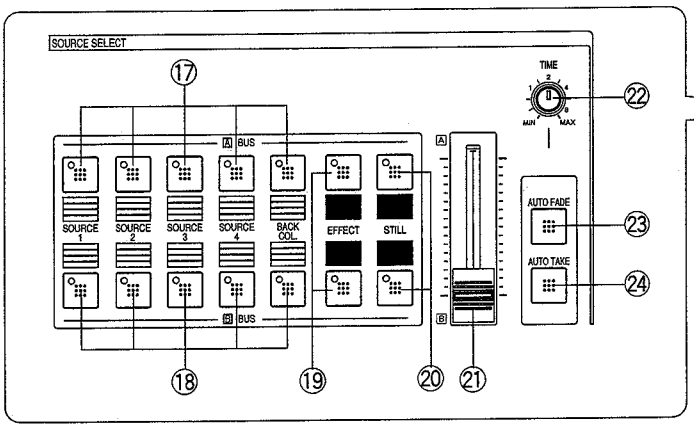
(13) Position Indicator (POSITION)

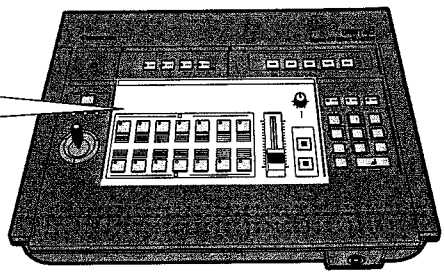
(14) Scene Grabber Indicator (SCENE. GRA.)

(15) Colour Correct Indicator (COL CORRECT)

(16) Joystick Control
This Joystick Control has three functions: setting the position of the specified wipe pattern, moving the cursor for setting the chroma key and correcting the Colour A-bus / B-bus.

■ SOURCE SELECT Section





(17) A-bus Selection Buttons (A)

SOURCE 1: Used to select Source 1 Audio/Video Signals (35)(36)(37) supplied to the rear panel.

SOURCE 2: Used to select Source 2 Audio/Video Signals (38)(39)(40) supplied to the rear panel.

SOURCE 3: Used to select Source 3 Audio/Video Signals (41)(42)(43) supplied to the rear panel.

SOURCE 4: Used to select Source 4 Audio/Video Signals (44)(45)(46) supplied to the rear panel.

BACK COL: Used to select the Back Colour.

(18) B-bus Selection Buttons

The same selections are available as for the A-bus Selection buttons (17).

(19) Effect Out Buttons (EFFECT)

Used to supply the effect signal to the preview and Rec Out connectors.

(20) Still Out Buttons (STILL)

An instant still or frozen image can be obtained by pressing this button.

(21) Mix/Wipe Control

Mix and wipe can be performed by operating this control.

(22) Time Control (TIME)

For adjusting the transition time of the Auto Fade Function and Auto Take Function.

(23) Auto Fade Button (AUTO FADE)

Executes automatic fade within the time set by TIME Control.

(24) Auto Take Button (AUTO TAKE)

Executes automatic wipe or mix within the time set by TIME Control.

Note: The Selection Button pressed blinks depending on the status of the Mix/Wipe Control and Auto Take button.

■ MODE SETTING Section

(25) Event Memory Button (EVENT MEMORY)

Used to memorize the present status.

(26) Call Button (CALL)

Used to recall the memorized status.

(27) Number Button (No.)

(28) Up Button

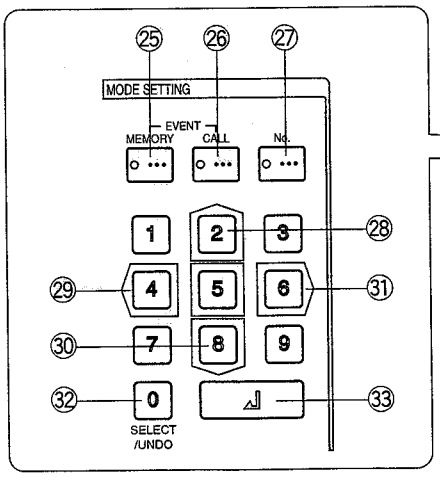
(29) Left Button

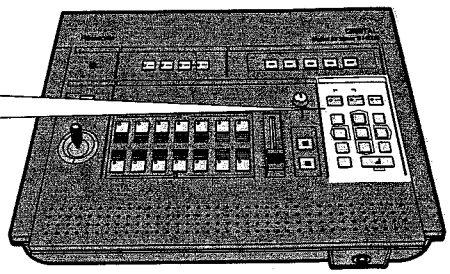
(30) Down Button

(31) Right Button

(32) SELECT/UNDO Button

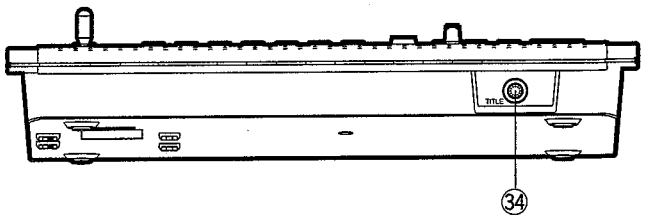
(33) Enter Button (⏎)



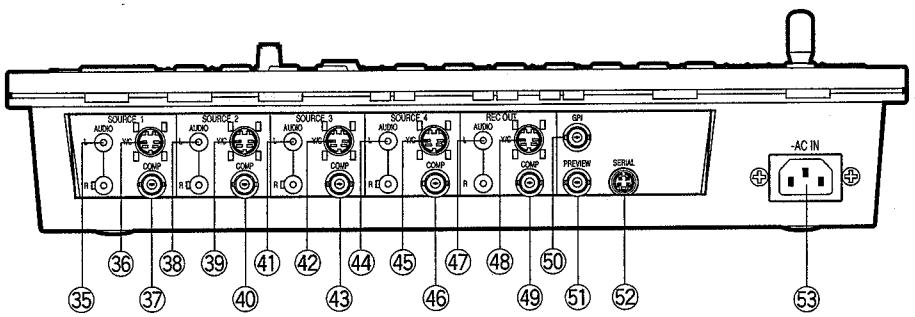


■ Front Panel

(34) Titler Connector (TITLE)



■ Rear Panel



(35) Source 1 Audio Input Jack (SOURCE 1 AUDIO)

(36) Source 1 S-video Input Connector (Y/C)

(37) Source 1 Composite Video Signal Input Jack

(38) Source 2 Audio Input Jack (SOURCE 2 AUDIO)

(39) Source 2 S-video Input Connector (Y/C)

(40) Source 2 Composite Video Signal Input Jack

(41) Source 3 Audio Input Jack (SOURCE 3 AUDIO)

(42) Source 3 S-video Input Connector (Y/C)

(43) Source 3 Composite Video Signal Input Jack

(44) Source 4 Audio Input Jack (SOURCE 4 AUDIO)

(45) Source 4 S-video Input Connector (Y/C)

(46) Source 4 Composite Video Signal Input Jack

(47) Recording Out Audio Output Jack (REC OUT AUDIO)

(48) Recording Out S-video Output Connector (REC OUT Y/C)

(49) Recording Out Composite Video Signal Output Jack

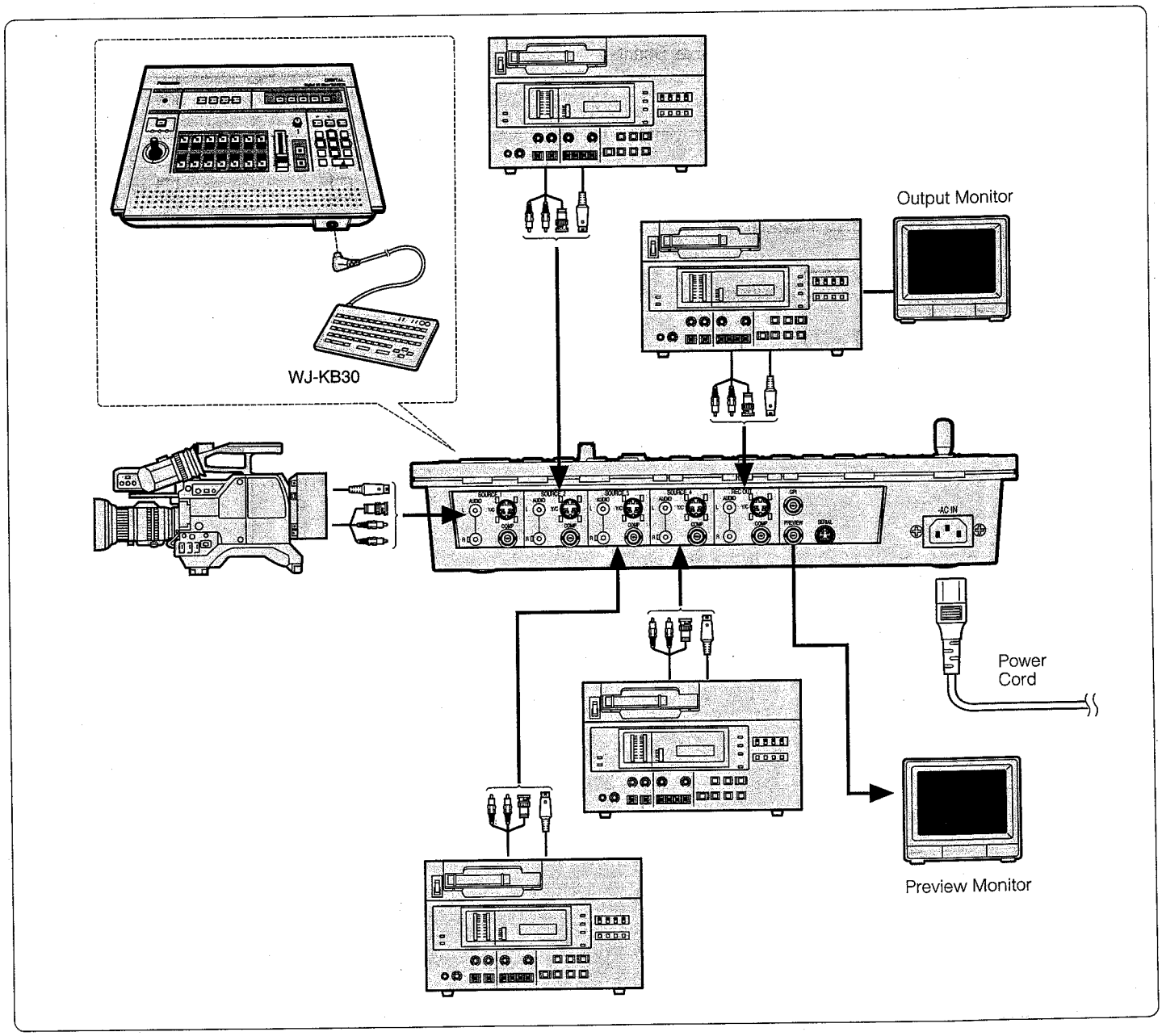
(50) GPI Connector (GPI)
Refer this connection to qualified service technician or system Installer.

(51) Preview Output Connector
Connect to the video input connector of the preview monitor.

(52) Serial Connector (SERIAL)
This connector is used for connecting an AG-850 Editing Controller or similar unit by RS-422 format.

(53) Power Socket (AC IN)
Connect the Power Cord (provided) to this socket.

SYSTEM CONNECTION

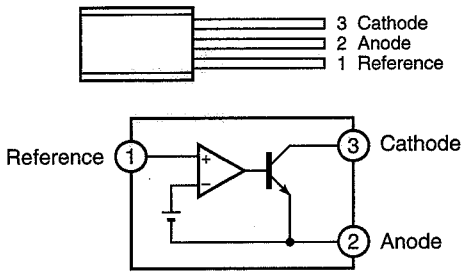


CIRCUIT DESCRIPTION

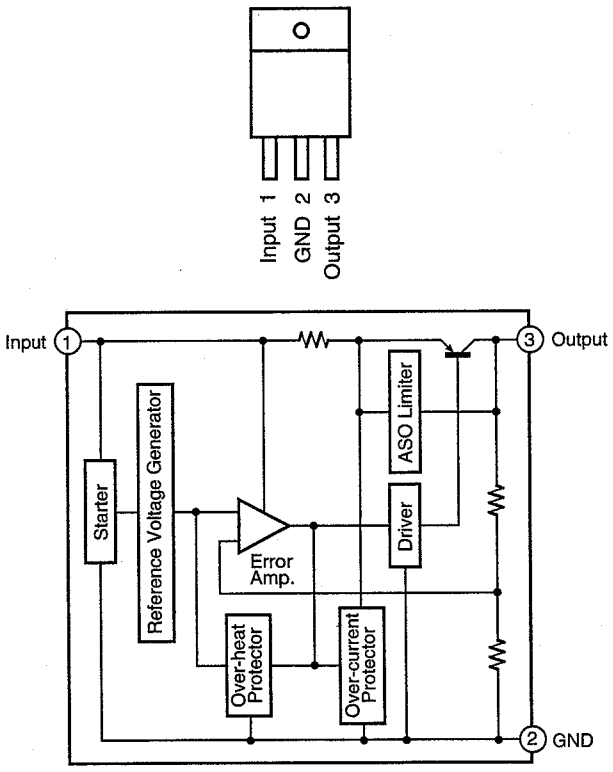
IC Description

1. Power Board

1.1. IC2 on the Power Board is using the Variable Shunt Regulator IC YWTA76431S.
Description of this IC is as follows:

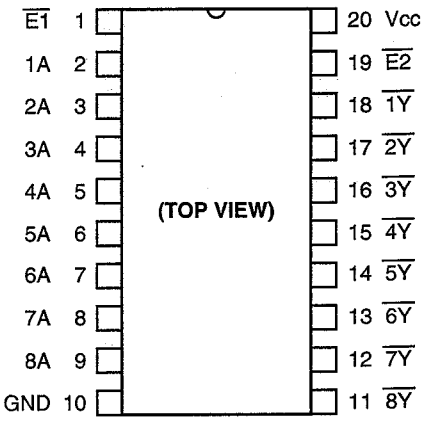


1.2. IC1 on the Power Board is using the 3-Terminal Voltage Regulator IC YWUPC24M12HF.
Description of this IC is as follows:



2. Main Board

2.1. IC1 on the Main Board is using the Octal 3-State Bus Buffers IC MC74HC541AF.
Description of this IC is as follows:

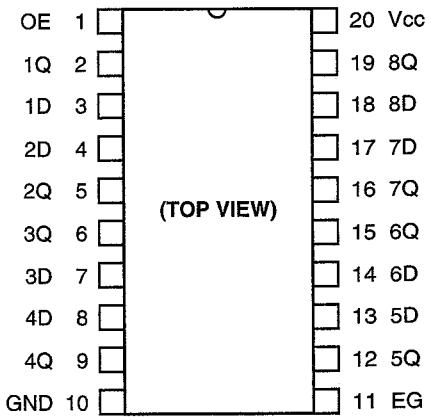


Truth Table

INPUTS		OUTPUT
$\overline{E1}$	$\overline{E2}$	$\overline{Y}$
L	L	$\overline{A}$
H	*	Z
*	H	

* : Don't care.
Z : High Impedance

2.2. IC6 and IC7 on the Main Board are using the Octal 3-State D-FFs IC MC74HC374AF.
Description of this IC is as follows:

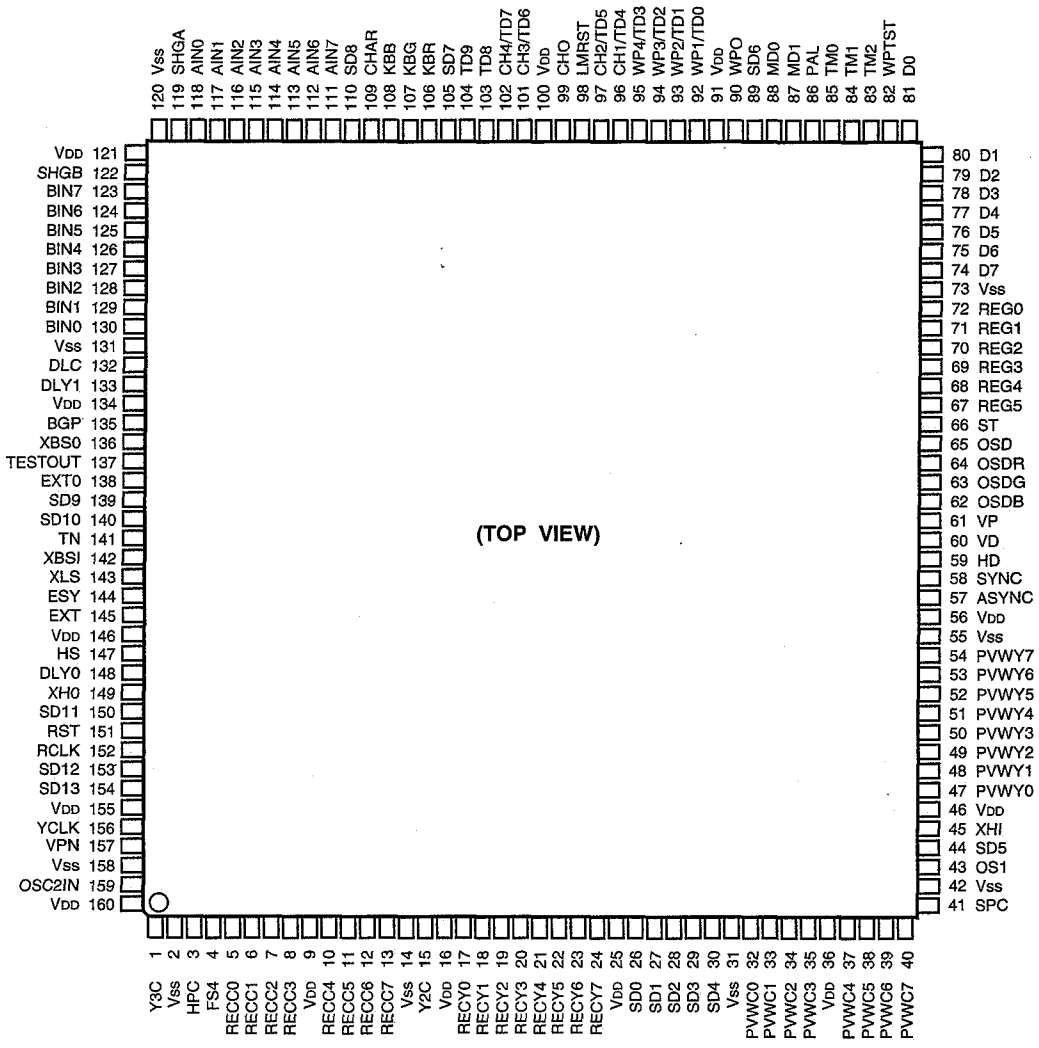


Truth Table

INPUTS		FUNCTION
OE	EG	
*	L	Latch
*	H	Q = D
H	*	Z

* : Don't care.
Z : High Impedance

2.3. IC62 on the Main Board is using the 2-D Low Pass Filter HCMOS Gate Array Logic IC YWAJ0016. Description of this IC is as follows:



Pin	Name	I/O	Description
1	Y3C	O	Y3C signal output terminal.
2	Vss	–	Ground terminal.
3	HPC	O	HPC signal output terminal.
4	FS4	O	FS4 signal output terminal.
5	RECC0	O	REC(C) signal output terminals.
6	RECC1	O	
7	RECC2	O	
8	RECC3	O	
9	VDD	–	Power supply terminal.
10	RECC4	O	REC(C) signal output terminals.
11	RECC5	O	
12	RECC6	O	
13	RECC7	O	
14	Vss	–	Ground terminal.
15	Y2C	O	Y2C signal output terminal.

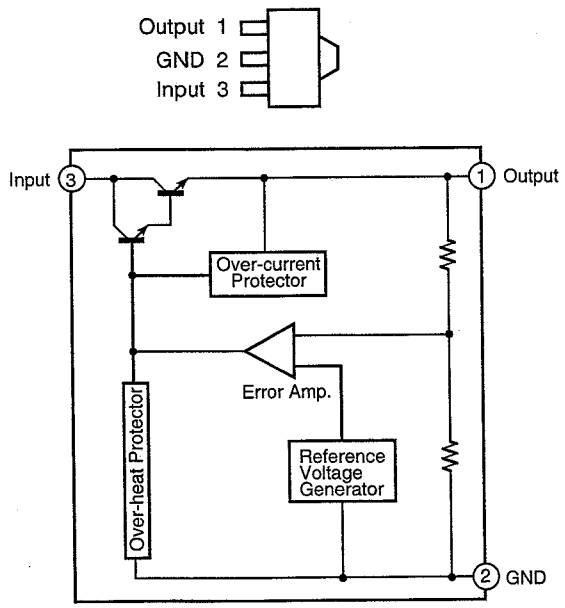
Pin	Name	I/O	Description
16	VDD	–	Power supply terminal.
17	RECY0	O	REC(Y) signal output terminals.
18	RECY1	O	
19	RECY2	O	
20	RECY3	O	
21	RECY4	O	
22	RECY5	O	
23	RECY6	O	
24	RECY7	O	
25	VDD	–	Power supply terminal.
26	SD0	I	SD signal input terminals.
27	SD1	I	
28	SD2	I	
29	SD3	I	
30	SD4	I	
31	Vss	–	Ground terminal.

Pin	Name	I/O	Description
32	PVWC0	O	Preview(C) signal output terminals.
33	PVWC1	O	
34	PVWC2	O	
35	PVWC3	O	
36	Vss	–	Ground terminal.
37	PVWC4	O	Preview(C) signal output terminals.
38	PVWC5	O	
39	PVWC6	O	
40	PVWC7	O	
41	SPC	O	SPC signal output terminal.
42	VDD	–	Power supply terminal.
43	OS1I	I	OS signal input terminal
44	SD5	I	SD signal input terminal.
45	XHI	I	XH signal input terminal.
46	VDD	–	Power supply terminal.
47	PVWY0	O	Preview(Y) signal output terminals.
48	PVWY1	O	
49	PVWY2	O	
50	PVWY3	O	
51	PVWY4	O	
52	PVWY5	O	
53	PVWY6	O	
54	PVWY7	O	
55	Vss	–	Ground terminal.
56	VDD	–	Power supply terminal.
57	ASY	O	ASY signal output minals
58	SYC	O	SYC signal output terminas.
59	HD	O	HD signal output terminal.
60	VD	O	VD signal output terminal.
61	VP	O	VP signal output terminals.
62	OSDB	I	OSDB signal input terminal.
63	OSDG	I	OSDG signal input terminal.
64	OSDR	I	OSDR signal input terminal
65	OSD	I	OSD signal input terminal.
66	ST	I	Strobe signal input terminal.
67	REG5	I	Register signal input terminals.
68	REG4	I	
69	REG3	I	
70	REG2	I	
71	REG1	I	
72	REG0	I	
73	Vss	–	Ground terminal.
74	DATA7	I	DATA signal input terminals.
75	DATA6	I	
76	DATA5	I	
77	DATA4	I	
78	DATA3	I	
79	DATA2	I	
80	DATA1	I	
81	DATA0	I	

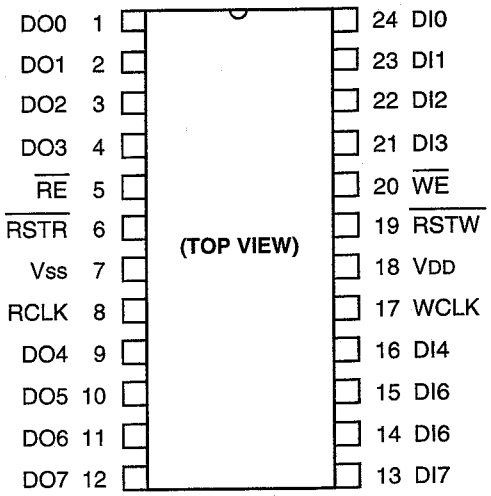
Pin	Name	I/O	Description
82	WPTST	I	WPTST signal input terminal.
83	TM2	I	TM signal input terminals.
84	TM1	I	
85	TM0	I	
86	PAL	I	PAL signal input terminal.
87	MD1	I	MD signal input terminals.
88	MD0	I	
89	SD6	I	SD signal input terminal.
90	CHOB	O	CHOB signal output terminal.
91	VDD	–	Power supply terminal.
92	WP1/TD0	I	TD signal input terminals.
93	WP2/TD1	I	
94	WP3/TD2	I	
95	WP4/TD3	I	
96	CH1/TD4	I	
97	CH2/TD5	I	
98	LMRST	O	LMRST signal output terminal.
99	CHOA	O	CHOA signal output terminal.
100	VDD	–	Ground terminal.
101	CH3/TD6	I	TD signal input terminals.
102	CH4/TD7	I	
103	TD8	I	
104	TD9	I	
105	SD7	I	SD signal input treminal.
106	KBR	I	Red signal input terminal.
107	KBG	I	Green signal input terminal.
108	KBB	I	Blue signal input terminal.
109	CHAR	I	Character signal input terminal.
110	SD8	I	SD signal input terminal.
111	AIN7	I	A signal input terminals.
112	AIN6	I	
113	AIN5	I	
114	AIN4	I	
115	AIN3	I	
116	AIN2	I	
117	AIN1	I	
118	AIN0	I	
119	SHGA	I	SHGA signal input treminal.
120	Vss	–	Ground terminal.
121	VDD	I	Power supply terminal.
122	SHGB	–	SHGB signal input terminal.
123	BIN7	I	B signal input terminals.
124	BIN6	I	
125	BIN5	I	
126	BIN4	I	
127	BIN5	I	
128	BIN2	I	
129	BIN1	I	
130	BIN0	I	
131	Vss	–	Ground terminal.

Pin	Name	I/O	Description
132	DLC	O	DLC signal output terminal.
133	DLY1	O	DLY1 signal output terminal.
134	VDD	–	Power supply terminal.
135	BGP	O	Burst Gate Pulse output terminal.
136	XBSO	O	XBSO signal output terminal.
137	TESTOUT	O	TEST signal output terminal.
138	EXT0	O	External signal output terminal.
139	SD9	I	SD Data input terminals.
140	SD10	I	
141	TN	I	TN signal input terminal.
142	XBSI	I	XBSI signal input terminal.
143	XLS	I	XLS signal input terminal.
144	XSY	I	XSY signal input terminal.
145	EXT	I	External signal input terminal.
146	VDD	–	Power supply terminal.
147	HS	O	HS signal output terminal.
148	DLY0	I	DLY0 signal input terminal.
149	XH0	O	XH signal output terminal.
150	SD11	I	SD signal input terminals.
151	RST	I	RST signal input terminal.
152	RCLK	I	Clock pulse input terminal.
153	SD12	I	SD Data input terminals.
154	SD13	I	
155	VDD	–	Power supply terminal.
156	YCLK	O	Clock pulse output terminal.
157	VPN	O	VPN signal output terminal.
158	Vss	–	Ground terminal.
159	OS2I	I	Oscillation signal input terminal.
160	VDD	–	Power supply terminal.

2.4. IC64 on the Main Board is using the 3-Terminal Voltage Regulator IC YW78L09UATE2.
Description of these IC is as follows:

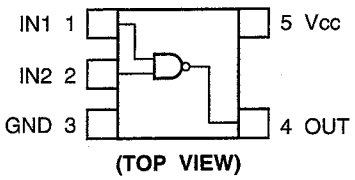


2.5. IC28, IC42 and IC59 on the Main Board are using the PAL 1,135-word x 8-Bit FIFO High Speed Line Buffers IC YWUPD485505G25.
Description of this IC is as follows:



Pin	Name	I/O	Description
1	DO0	O	Data output terminals. (8-Bit)
2	DO1	O	
3	DO2	O	
4	DO3	O	
5	$\overline{RE}$	I	Read Enable signal input terminal.
6	$\overline{RSTR}$	I	Reset Read pulse input terminal.
7	Vss	–	Ground terminal.
8	RCLK	I	Read Clock pulse input terminal.
9	DO4	O	Data output terminals. (8-Bit)
10	DO5	O	
11	DO6	O	
12	DO7	O	
13	DI7	I	Data input terminals. (8-Bit)
14	DI6	I	
15	DI5	I	
16	DI4	I	
17	WCLK	I	Write Clock pulse input terminal.
18	VDD	–	Power supply terminal.
19	$\overline{RSTW}$	I	Reset Write Pulse input terminal.
20	$\overline{WE}$	I	Write Enable signal input terminal.
21	DI3	I	Data input terminals. (8-Bit)
22	DI2	I	
23	DI1	I	
24	DI0	I	

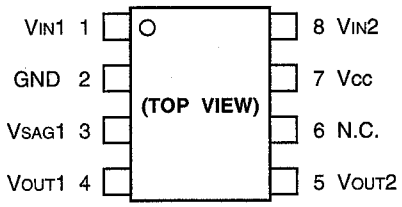
2.6. IC12, IC47, IC49, and IC50 on the Main Board are using the Single 2-Input AND Gate IC YWSC7S08F. Description of this IC is as follows:



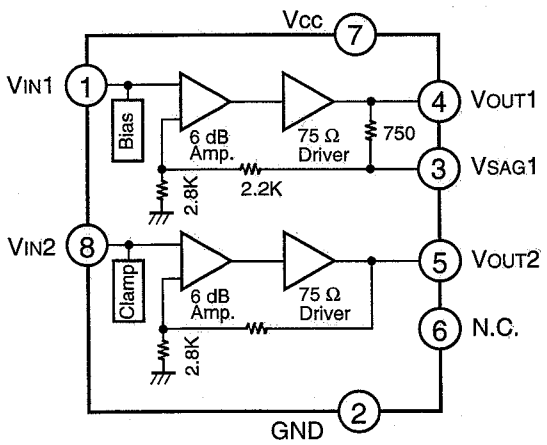
Truth Table

Inputs		Output
IN1	IN2	
L	L	H
H	L	H
L	H	H
H	H	L

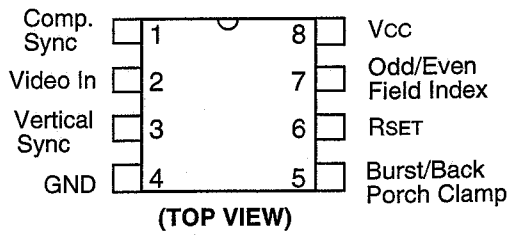
2.7. IC14 on the Main Board is using the Dual 6dB Video Amplifier IC with 75Ω Driver YWNJM2268V. Description of this IC is as follows:

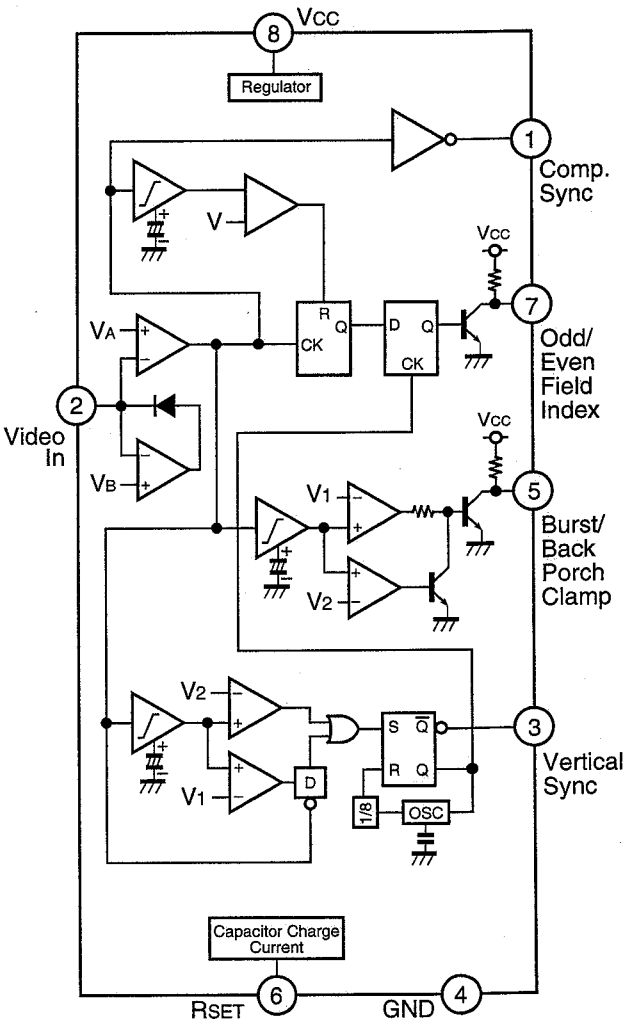


Pin	Name	I/O	Description
1	VIN1	I	Input terminal for Amplifier 1.
2	GND	–	Ground terminal.
3	VSAG1	–	Sag compensation terminal for Amplifier 1.
4	VOUT1	O	Output terminal for Amplifier 1.
5	VOUT2	O	Output terminal for Amplifier 2.
6	N.C.	–	Non connection.
7	Vcc	–	Power supply terminal.
8	VIN2	I	Input terminal for Amplifier 2.

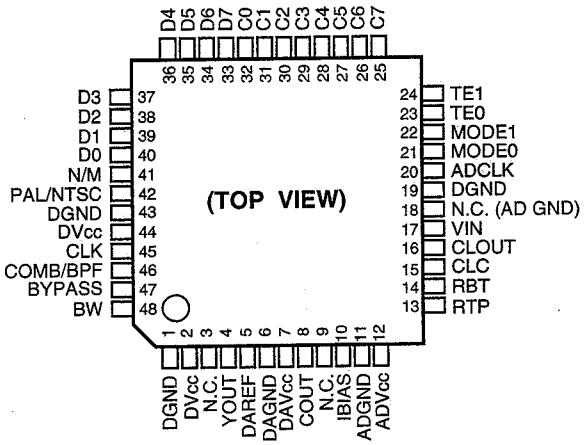


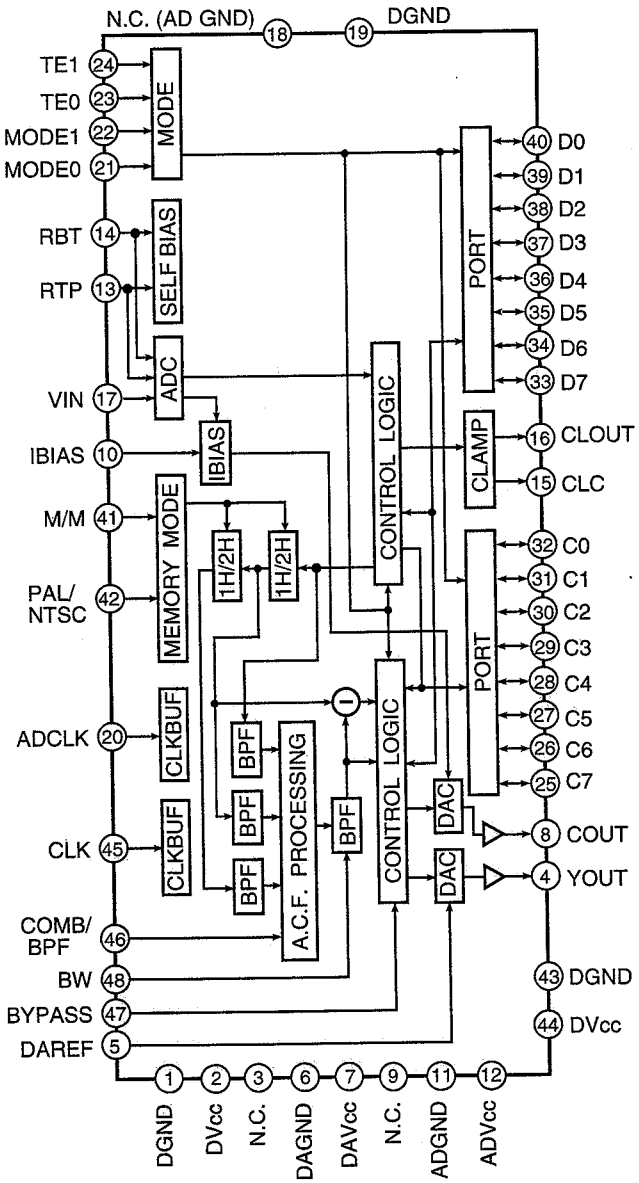
2.8. IC511 and IC512 on the Main Board are using the Video Sync. Separator IC YWLM1881M. Description of this IC is as follows:





2.9. IC26 and IC40 on the Main Board are using the Comb/BPF Filter IC YWM141625BFU.
Description of this IC is as follows:



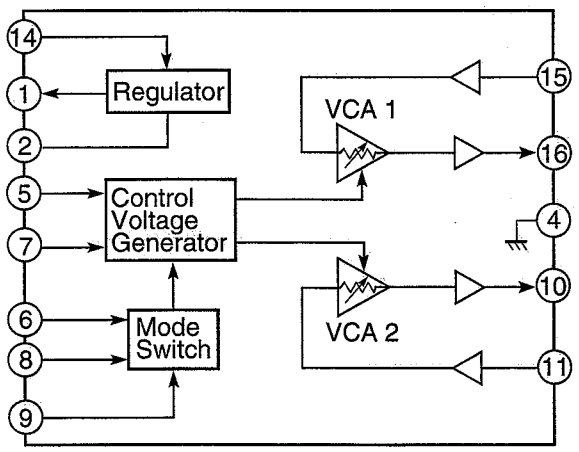


Pin	Name	I/O	Description
1	DGND	–	Ground terminal for Digital Circuit.
2	DVcc	–	+5V supply terminal for Digital Circuit.
3	N.C.	–	Non Connection.
4	YOUT	O	Luminance signal output terminal.
5	DAREF	I	Reference Voltage input terminal for D/A Converter Circuit.
6	DAGND	–	Ground terminal for D/A Converter Circuit.
7	DAVcc	–	+5V supply terminal for D/A Converter Circuit.
8	COUT	O	Chrominance signal output terminal.
9	N.C.	–	Non Connection.
10	IBIAS	I	Current Control terminal for A/D and D/A Coverter Circuits.
11	ADGND	–	Ground terminal for A/D Converter Circuit.
12	ADVcc	–	+5V supply terminal for A/D Converter Circuit.
13	RTP	I	Top Reference Voltage input terminal for A/D Converter Circuit.
14	RBT	I	Bottom Reference Voltage input terminal for A/D Converter Circuit.
15	CLC	I	Clamp Time Constant setting terminal.
16	CLOUT	O	Clamp Voltage output terminal.
17	VIN	I	Voltage input terminal for A/D Converter Circuit; 3.3Vp-p max.
18	N.C.	–	Non Connection.
19	DGND	–	Ground terminal for Digital Circuit.
20	ADCLK	I	Clock Pulse input terminal for A/D Converter Circuit.
21	MODE0	I	Mode setting signal input terminals.
22	MODE1	I	
23	TE0	I	Test Mode setting signal input terminals.
24	TE1	I	
25	C7	I/O	Luminance Data input/output terminals.
26	C6	I/O	
27	C5	I/O	
28	C4	I/O	
29	C3	I/O	
30	C2	I/O	
31	C1	I/O	
32	C0	I/O	

Pin	Name	I/O	Description
33	D7	I/O	Chrominance Data input/output terminals.
34	D6	I/O	
35	D5	I/O	
36	D4	I/O	
37	D3	I/O	
38	D2	I/O	
39	D1	I/O	
40	D0	I/O	
41	N/M	I	Color TV Sytem Select signal input terminals.
42	PAL/NTSC	I	N/M: L, PAL/NTSC: L, SYSTEM: PAL B, G, H, I N/M: L, PAL/NTSC: L, SYSTEM: NTSC N/M: H, PAL/NTSC: H, SYSTEM: PAL N N/M: H, PAL/NTSC: H, SYSTEM: PAL M
43	DGND	–	Ground terminal for Digital Circuit.
44	DVcc	–	+5V supply terminal for Digital Circuit.
45	CLK	I	Clock Pulse input terminal.
46	COMB/BPF	I	Filter Select signal input terminal. L: Comb Filter; H: Band Pass Filter
47	BYPASS	I	Bypass signal input terminal.
48	BW	I	Band switching signal input terminal for Chrominance signal. L : Narrow Band; H : Wide Band

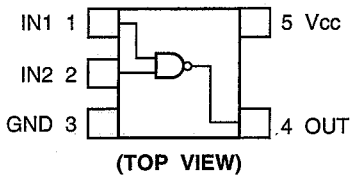
2.10. IC500-503 on the Main Board are using the 2-Channel Electronic Volume/Balance IC YWM51132 FP.

Description of this IC is as follows:



2.11. IC48 on the Main Board is using the Single 2-Input NAND Gate IC YWSC7S00FER.

Description of this IC is as follows:



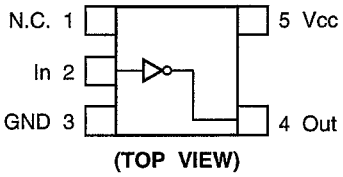
(TOP VIEW)

Truth Table

Inputs		Output
IN1	IN2	
L	L	H
H	L	H
L	H	H
H	H	L

2.12. IC18, IC19, IC33, IC44, IC53, IC56, IC100 and IC101 on the Main Board are using the Single Inverter IC YWSC7SU04FER.

Description of this IC is as follows:



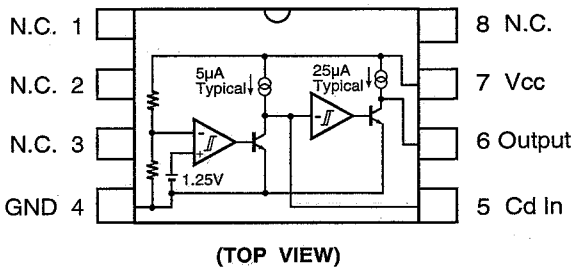
(TOP VIEW)

Truth Table

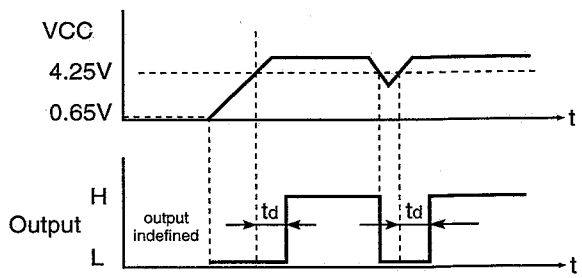
Input	Output
L	H
H	L

2.13. IC3 on the Main Board is using the Voltage Detector IC YWM51953AFP.

Description of this IC is as follows:

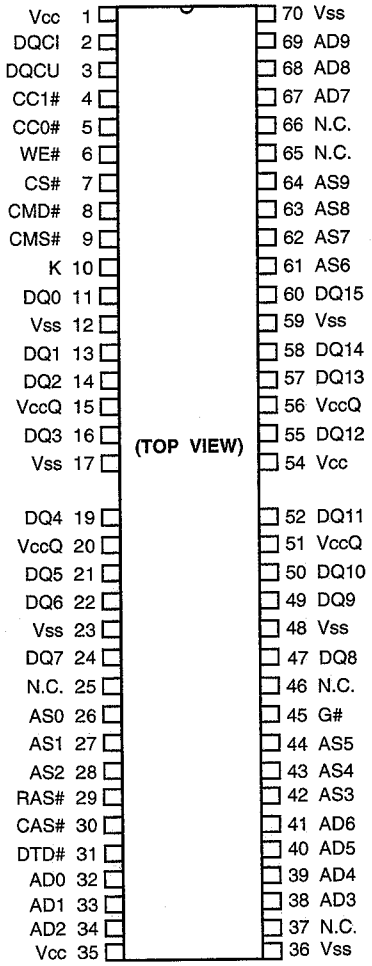


(TOP VIEW)



td ≈ 0.34 x Cd (pF) μsec.

2.14. IC30 and IC46 on the Main Board are using the 4-MB Cache DRAM IC YWM5M4V416TP.
Description of this IC is as follows:

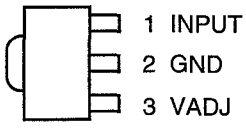


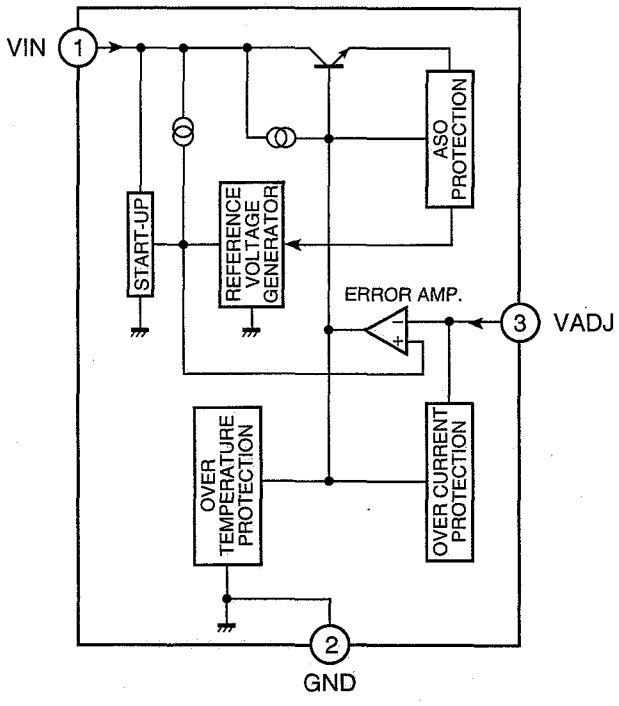
Pin	Name	I/O	Description
1	Vcc	–	Power supply.
2	DQCI	I	DQC signal input terminals.
3	DQCU	I	
4	CC1#	I	Control clock pulse input terminals.
5	CC0#	I	
6	WE#	I	Write Enable signal input terminal.
7	CS#	I	Chip Select signal input terminal.
8	CMD#	I	DRAM clock mask signal input terminal.
9	CMS#	I	SRAM clock mask signal input terminal.
10	K	I	K signal input terminal.
11	DQ0	I/O	DQ signal input/output terminal.
12	Vss	–	Ground terminal.
13	DQ1	I/O	DQ signal input/output terminals.
14	DQ2	I/O	

Pin	Name	I/O	Description
15	VccQ	–	Power supply.
16	DQ3	I/O	DQ signal input/output terminal.
17	Vss	–	Ground terminal.
19	DQ4	I/O	DQ signal input/output terminal.
20	VccQ	–	Power supply terminal.
21	DQ5	I/O	DQ signal input/output terminals.
22	DQ6	I/O	
23	P52/A10	I/O	P52/A10 signal input/output terminal.
24	Vss	–	Ground terminal.
25	N.C.	–	No connection.
26	AS0	I	AS signal input terminals.
27	AS1	I	
28	AS2	I	
29	RAS#	I	RAS signal input terminal.
30	CAS#	I	CAS signal input terminal.
31	DTD#	I	DTD signal input terminal.
32	AD0	I	Address signal input terminals.
33	AD1	I	
34	AD2	I	
35	Vcc	–	Power supply terminal.
36	Vss	–	Ground terminal.
37	N.C.	–	No connection.
38	AD3	I	Address signal input terminals.
39	AD4	I	
40	AD5	I	
41	AD6	I	
42	AS3	I	AS signal input terminals.
43	AS4	I	
44	AS5	I	
45	G#	I	G signal input terminal.
46	N.C.	I	No connection.
47	DQ8	I/O	DQ signal input/output terminal.
48	Vss	–	Ground terminal.
49	DQ9	I/O	DQ signal input/output terminals.
50	DQ10	I/O	
51	VccQ	I	Power supply terminal.
52	DQ11	I/O	DQ signal input/output terminal.
54	Vcc	–	Power supply terminal.
55	DQ12	I/O	DQ signal input/output terminal.
56	VccQ	–	Power supply terminal.

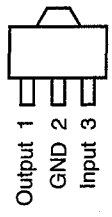
Pin	Name	I/O	Description
57	DQ13	I/O	DQ signal input/output terminals.
58	DQ14	I/O	
59	Vss	–	Ground terminal.
60	DQ15	I/O	DQ signal input/output terminal.
61	AS6	I	AS signal input terminals.
62	AS7	I	
63	AS8	I	
64	AS9	I	
65	N.C.	–	No connection.
66	N.C.	–	No connection.
67	AD7	I	Address signal input terminals.
68	AD8	I	
69	AD8	I	
70	Vss	–	Ground terminal.

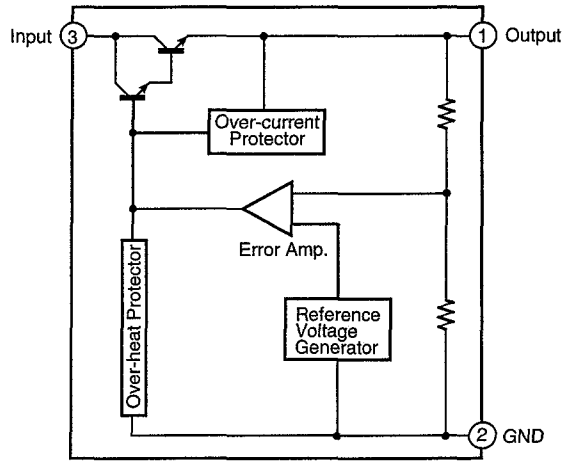
2.15. IC31 and IC51 on the Main Board are using the Voltage Regulator Driver IC YWM5237ML.
Description of this IC is as follows:





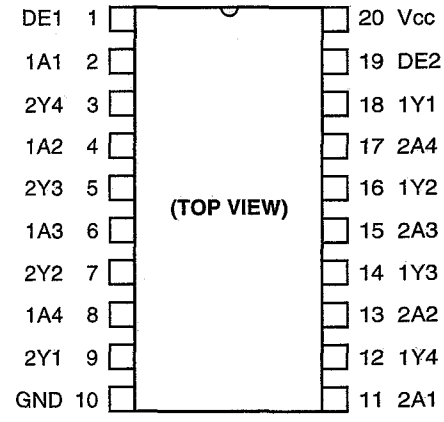
2.16. IC11 on the Main Board is using the 3-Terminal Voltage Regulator IC YW78L05UATE2.
Description of this IC is as follows:





2.17. IC513 on the Main Board are using the Quad 3-State Bus Transceivers IC YW74ABT244DB.

Description of this IC is as follows:

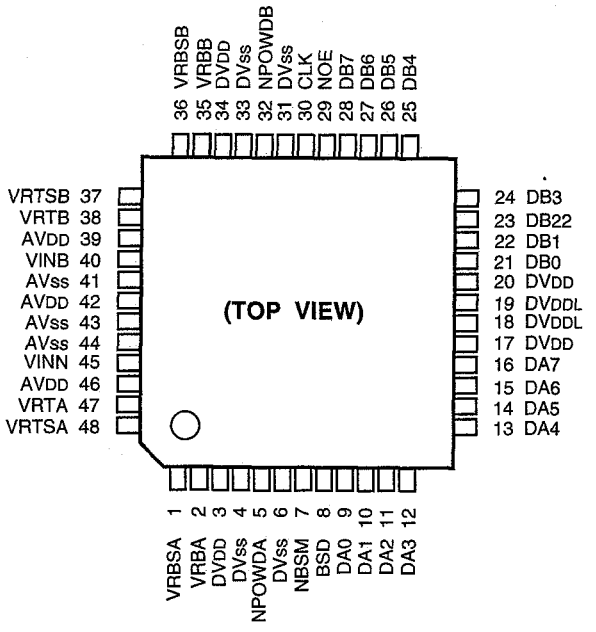


Truth Table

INPUTS		OUTPUT
$\overline{G}$	A	Y
H	*	Z
L	L	L
L	H	H

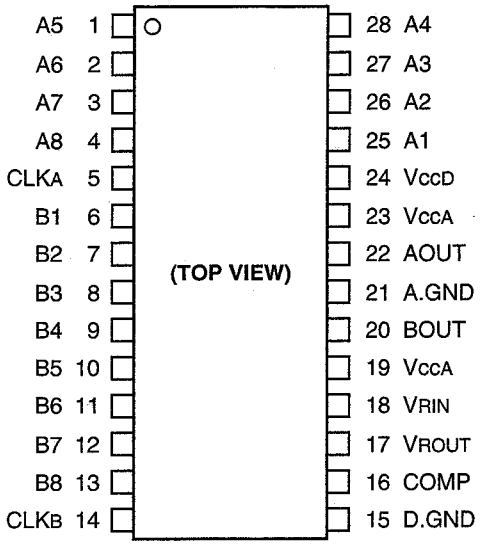
* : Don't care.
Z : High Impedance

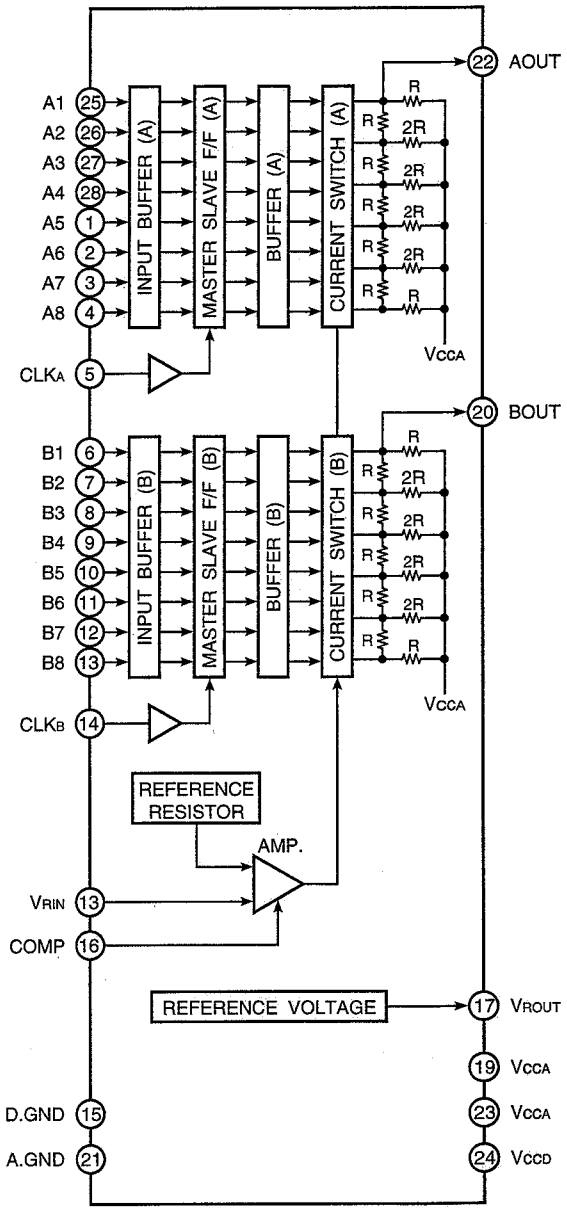
2.18. IC25 and IC39 on the Main Board are using the C-MOS 8-Bit 2-Channel High Speed A/D Converter IC MN65752H. Description of this IC is as follows:



Pin	Name	I/O	Description
1	VRBSA	O	A-ch Bottom side reference voltage output terminal.
2	VRBA	I	A-ch Bottom side reference voltage input terminal.
3	DVDD	–	Power supply terminal for Digital circuit.
4	DVss	–	Ground terminal for Digital circuit.
5	NPOWDA	I	Power down mode signal input terminal.
6	DVss	–	Ground terminal for Digital circuit.
7	NBSM	I	TEST signal input terminals.
8	BSD	I	
9	DA0	O	A-ch Digital Data output terminals. (8-Bit)
10	DA1	O	
11	DA2	O	
12	DA3	O	
13	DA4	O	
14	DA5	O	
15	DA6	O	
16	DA7	O	
17	DVDD	–	Power supply terminal for Digital circuit.
18	DVDDL	–	Low Voltage power supply terminals for circuit.
19	DVDDL	–	
20	DVDD	–	Power supply terminal for Digital circuit.
21	DB0	O	B-ch Digital Data output terminals. (8-Bit)
22	DB1	O	
23	DB2	O	B-ch Digital Data output terminals. (8-Bit)
24	DB3	O	
25	DB4	O	
26	DB5	O	
27	DB6	O	
28	DB7	O	
29	NOE	I	Digital Data Output Enable signal input terminal.
30	CLK	I	Clock Pulse input terminal.
31	DVss	–	Ground terminal for Digital circuit.
32	NPOWDB	I	B-ch Power down mode signal input terminal.
33	DVss	–	Ground terminal for Digital circuit.
34	DVDD	–	Power supply terminal for Digital circuit.
35	VRBB	I	B-ch Bottom side reference voltage input terminal.
36	VRBSB	O	B-ch Bottom side reference voltage output terminal.
37	VRTSB	O	B-ch Top side reference voltage output terminal.
38	VRTB	I	B-ch Top side reference voltage input terminal.
39	AVDD	–	Power supply terminal for Analog circuit.
40	VINB	I	B-ch Analog signal input terminal.
41	AVss	–	Ground terminal for Analog circuit.
42	AVDD	–	Power supply terminal for Analog circuit.
43	AVss	–	Ground terminal for Analog circuit.
44	AVss	–	
45	VINA	I	A-ch Analog signal input terminal.
46	AVDD	–	Power supply terminal for Analog circuit.
47	VRTA	I	A-ch Top side reference voltage input terminal.
48	VRTSA	O	A-ch Top side reference voltage output terminal.

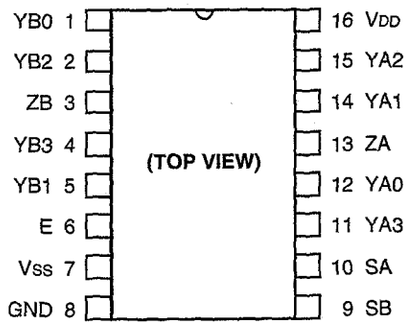
2.19. IC52 and IC55 on the Main Board are using the 8-Bit 2-Channel D/A Converter IC YWMB40968PF. Description of this IC is as follows:





Pin	Name	I/O	Description
1	A5	I	Ach Digital Data input terminals. (8-Bit) (LSB)
2	A6	I	
3	A7	I	
4	A8	I	
5	CLKA	I	Ach Clock pulse input terminal.
6	B1	I	Bch Digital Data input terminals. (8-Bit) (MSB) (LSB)
7	B2	I	
8	B3	I	
9	B4	I	
10	B5	I	
11	B6	I	
12	B7	I	
13	B8	I	
14	CLKB	I	Bch Clock pulse input terminal.
15	D.GND	–	Ground terminal for Digital circuit.
16	COMP	I	Phase Compensation terminal.
17	VROUT	O	Reference Voltage output terminal.
18	VRIN	I	Reference Voltage input terminal.
19	VCCA	–	Power supply terminal for Analog circuit.
20	BOUT	O	Bch Analog signal output terminal.
21	A.GND	–	Ground terminal for Analog circuit.
22	AOUT	O	Ach Analog signal output terminal.
23	VCCA	–	Power supply terminal for Analog circuit.
24	VCCD	–	Power supply terminal for Digital circuit.
25	A1	I	Ach Digital Data input terminals. (8-Bit) (MSB)
26	A2	I	
27	A3	I	
28	A4	I	

2.20. IC20, IC21, IC34, and IC35 on the Main Board are using the Analog Multiplexer/Demultiplexer IC MC74HC4052F.
Description of this IC is as follows:

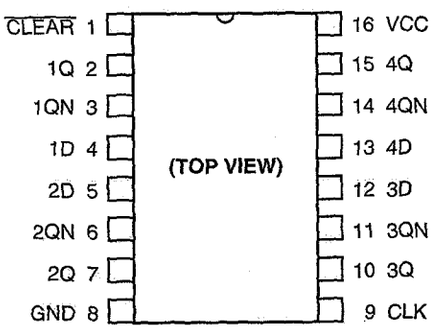


Truth Table

INHIBIT	B	A	X COMMON	Y COMMON
L	L	L	0X	0Y
L	L	H	1X	1Y
L	H	L	2X	2Y
L	H	H	3X	3Y
H	*	*	NONE	NONE

* : Don't care.

2.21. IC5 on the Main Board is using the Hex D-FFs IC YWMC74HC175F.
Description of this IC is as follows:

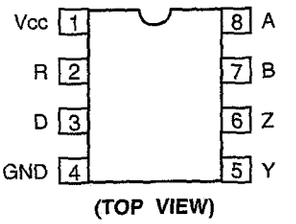


Truth Table

INPUTS			OUTPUTS		Function
$\overline{CLR}$	D	CLK	Q	$\overline{Q}$	
L	*	*	L	H	Clear
H	L	↓	L	H	—
H	H	↓	H	L	—
H	*	↑	Qn	$\overline{Qn}$	No Change

* : Don't care.

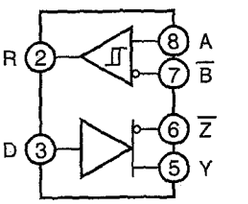
2.22. IC65 on the Main Board are using the RS-422 Transceiver IC YWSN75179BPS.
Description of this IC is as follows:



Truth Table

Driver Section

INPUT	OUTPUTS	
D	Y	$\overline{Z}$
H	H	L
L	L	H

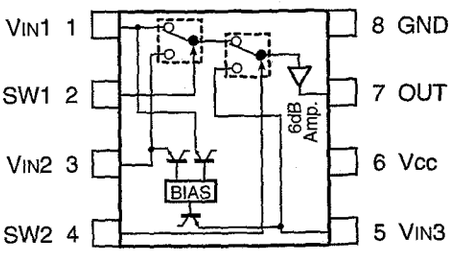


Receiver Section

INPUT	OUTPUT
VIO	R
VIO>0.2V	H
-0.2V<VIO<0.2V	*
VIO>-0.2V	L

VIO : (A Voltage) - ($\overline{B}$ Voltage)
* : Indeterminacy

2.23. IC900 and IC901 on the Main Board are using the 3-Input Video Switch IC YWNJM2246M.
Description of this IC is as follows:

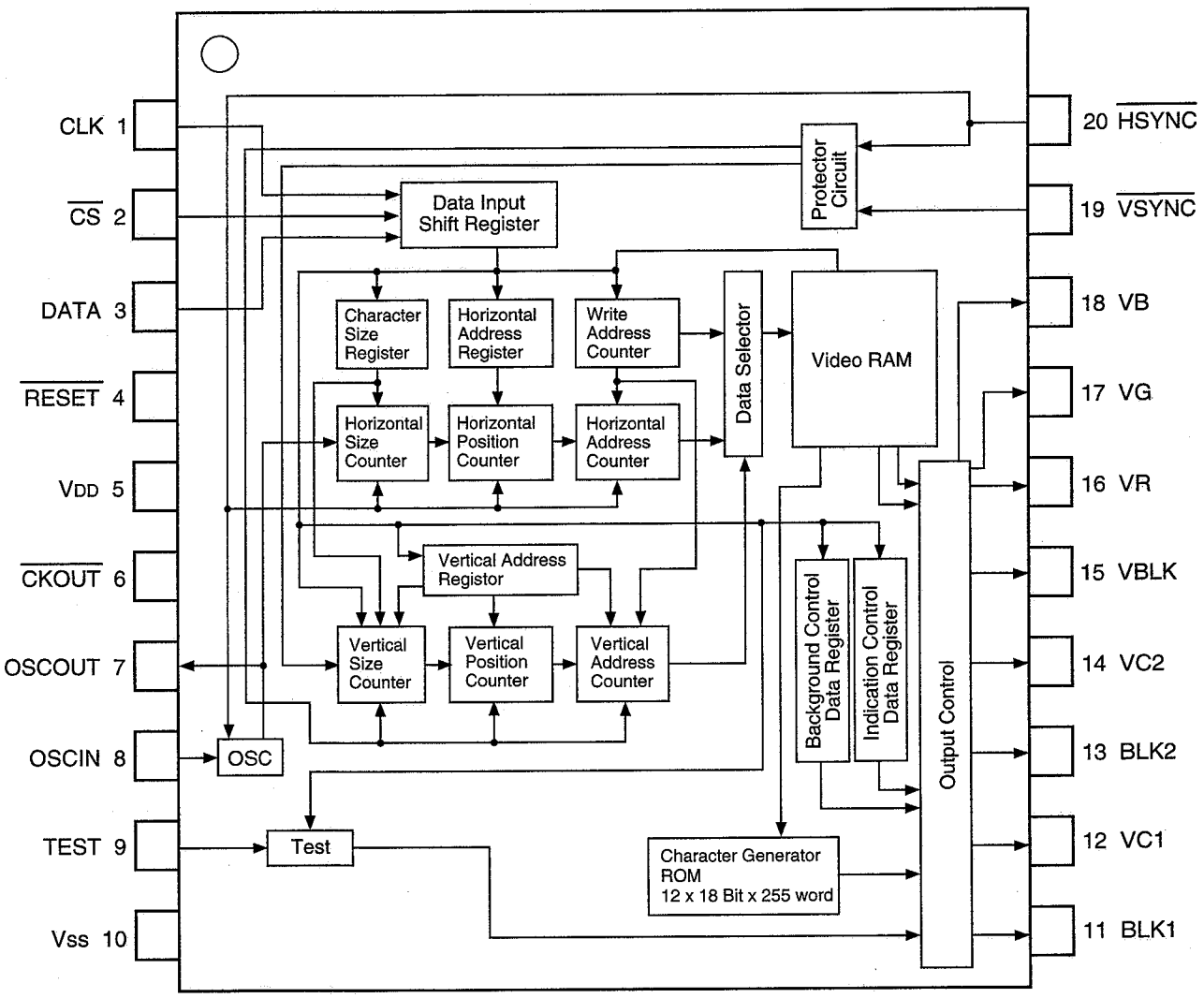


Truth Table

SW1	SW2	OUT
L	L	VIN1
H	L	VIN2
*	H	VIN3

* : Don't care.

2.24. IC58 on the Main Board is using the Character Generator IC YWBU6144FV.
Description of this IC is as follows:

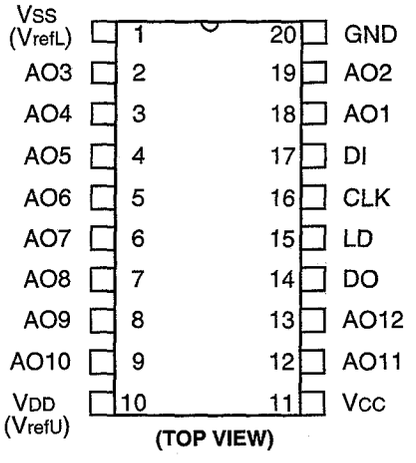


(TOP VIEW)

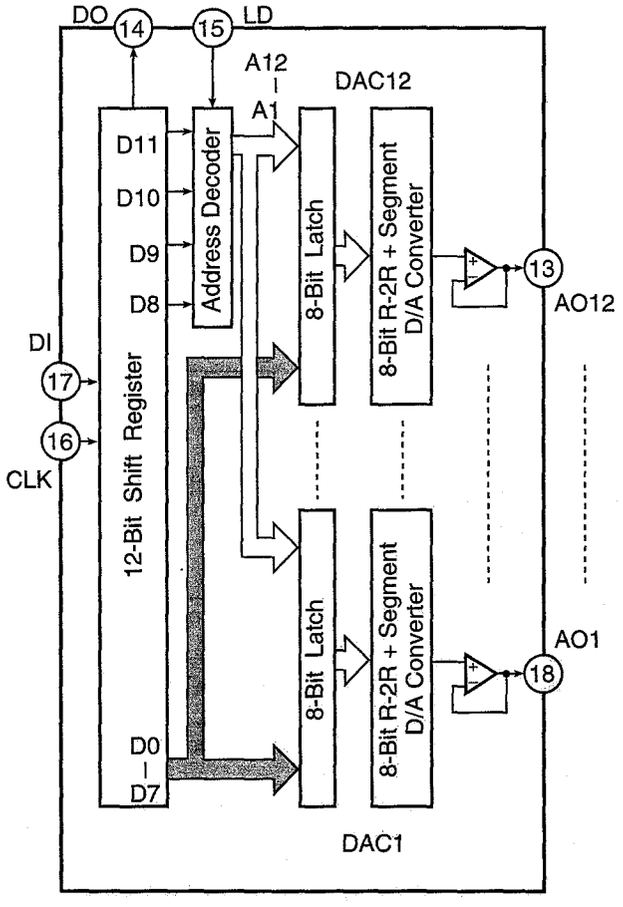
Pin	Name	I/O	Description
1	CLK	I	Clock Pulse input terminal.
2	$\overline{CS}$	I	Chip Select signal input terminal.
3	DATA	I	Serial Data input terminal.
4	$\overline{RESET}$	I	Reset pulse input terminal.
5	VDD	–	Power supply terminal.
6	$\overline{CKOUT}$	O	Clock pulse output terminal.
7	OSCOUT	O	Oscillator output terminal.
8	OSCIN	I	Oscillator input terminal.
9	TEST	I	Test terminal.
10	Vss	–	Ground terminal.

Pin	Name	I/O	Description
11	BLK1	O	Blanking Pulse-1 output terminal.
12	VC1	O	Character singal-1 output terminal.
13	BLK2	O	Blanking Pulse-2 output terminal.
14	VC2	O	Character signal-2 output terminal.
15	VBLK	O	V. Blanking pulse output terminal.
16	VR	O	Character Data output terminals.
17	VG	O	
18	VB	O	
19	$\overline{VSYNC}$	I	Vertical Sync signal input termnal.
20	$\overline{HSYNC}$	I	Horizontal Sync singal input terminal.

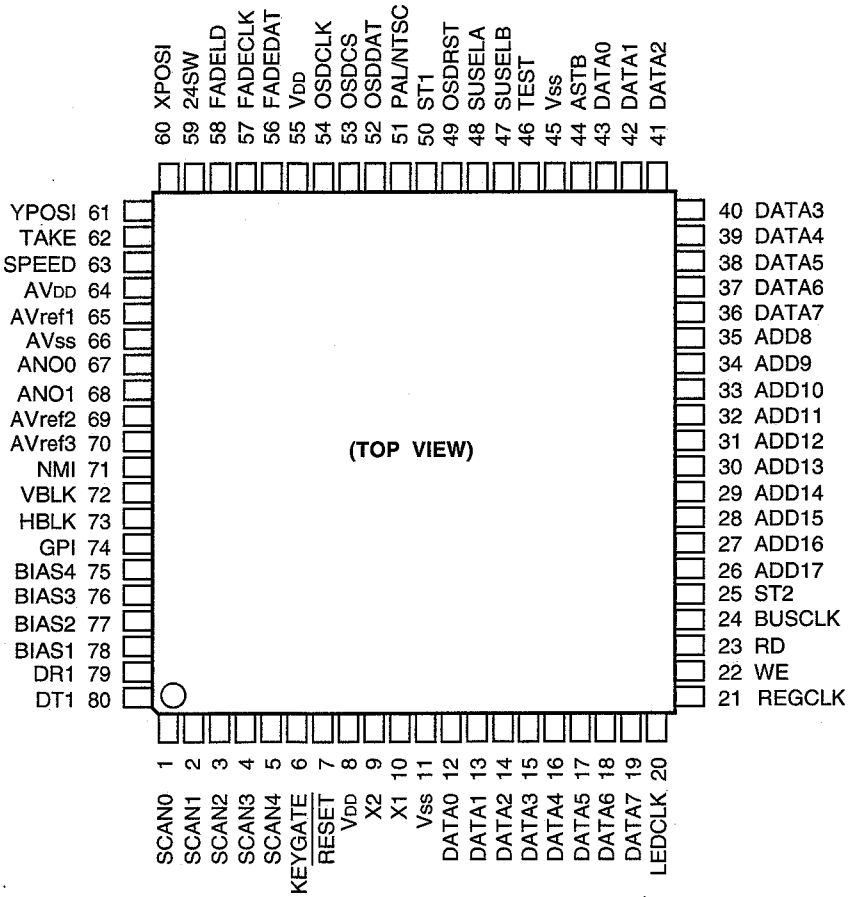
2.25. IC15 on the Main Board is using the 8-Bit 12-Channel D/A Converter YWM62352GP.
Description of this IC is as follows:



Pin	Name	I/O	Description
1	VSS (VrefL)	–	Lower reference voltage supply terminal for D/A Converter circuit.
2	AO3	O	Analog Data output terminals.
3	AO4	O	
4	AO5	O	
5	AO6	O	
6	AO7	O	
7	AO8	O	
8	AO9	O	
9	AO10	O	
10	VDD (VrefU)	–	Upper reference voltage supply terminal for D/A Converter circuit.
11	VCC	–	Power supply terminal terminal.
12	AO11	O	Analog Data output terminals.
13	AO12	O	
14	DO	O	MSB Data output terminal from 12-Bit Shift Register.
15	LD	I	Load signal input terminal. Data of 12-Bit Shift Register should be loaded to Decoder and D/A Output Registers when LD = H.
16	CLK	I	Shift Clock pulse input terminal. Serial Data from DI terminal should be input to Decoder and 12-Bit Shift Register at raising edge of this signal.
17	DI	I	12-Bit Serial Data input terminal.
18	AO1	O	Analog Data output terminals.
19	AO2	O	
20	GND	–	Ground terminal.



2.26. IC4 on the Main Board is using the 16-Bit Microprocessor IC YWUPD784038A.
Description of this IC is as follows:



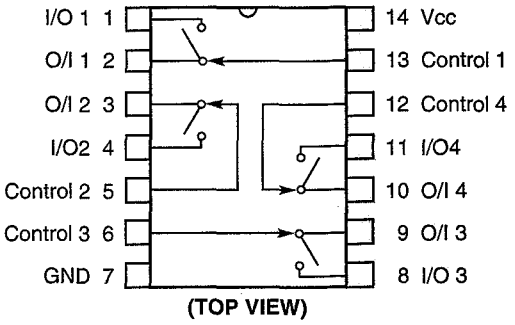
Pin	Name	I/O	Description
1	SCAN0	O	Key Scan signal output terminals.
2	SCAN1	O	
3	SCAN2	O	
4	SCAN3	O	
5	SCAN4	O	
6	KEYGATE	O	Key Gate signal output terminal.
7	$\overline{\text{RESET}}$	I	Reset pulse input terminal.
8	VDD	–	Power supply terminal.
9	X2	–	Crystal Oscillator connecting terminals.
10	X1	I	
11	Vss	–	Ground terminal.
12	DATA0	I/O	Data input/output terminals. (8-Bit)
13	DATA1	I/O	
14	DATA2	I/O	

Pin	Name	I/O	Description
15	DATA3	I/O	Data input/output terminals. (8-Bit)
16	DATA4	I/O	
17	DATA5	I/O	
18	DATA6	I/O	
19	DATA7	I/O	
20	LEDCLK	O	LED Clock pulse output terminal.
21	REGCLK	O	Register Clock pulse output terminal.
22	WE	O	Write Enable signal output terminal.
23	RD	O	Read Strobe pulse output terminal.
24	BUSCLK	O	Bus Clock pulse output terminal.
25	ST2	O	ST signal output terminal.

Pin	Name	I/O	Description
26	ADD17	O	Address signal output terminals. (12-Bit)
27	ADD16	O	
28	ADD15	O	
29	ADD14	O	
30	ADD13	O	
31	ADD12	O	
32	ADD11	O	
33	ADD10	O	
34	ADD9	O	
35	ADD8	O	
36	DATA7	I/O	Data input/output terminals. (8-Bit)
37	DATA6	I/O	
38	DATA5	I/O	
39	DATA4	I/O	
40	DATA3	I/O	
41	DATA2	I/O	
42	DATA1	I/O	
43	DATA0	I/O	
44	ASTB	O	Address Strobe signal output terminal.
45	Vss	–	Ground terminal.
46	TEST	I	TEST signal input terminal.
47	SVSELB	O	SVSELB signal output terminal.
48	SVSELA	O	SVSELA signal output terminal.
49	OSDRST	O	OSDRST signal output terminal.
50	ST1	O	ST1 signal output terminal.
51	PAL/NTSC	I	PAL/NTSC signal input terminal.
52	OSDDAT	O	Port signal input/output terminals. (8-Bit)
53	OSDCS	O	
54	OSDCLK	O	
55	VDD	–	Power supply terminal.
56	FADE DAT	O	FADEDAT signal output terminal.
57	FADECLK	O	FADECLK signal output terminal.
58	FADELD	O	FADELD signal output terminal.
59	24SW	I	24SW input terminal.
60	XPOSI	I	XPOSI signal input terminal.
61	YPOSI	I	YPOSI signal input terminal.
62	TAKE	I	TAKE signal inout terminal.
63	SPEED	I	SPEED signal inout terminal.
64	AVDD	–	Analog Power supply terminal.
65	AVref1	–	Reference voltage terminal 1.
66	AVss	–	Analog Ground terminal.
67	ANO0	O	Analog 0 signal output terminal.
68	ANO1	O	Analog 1 signal output terminal.
69	AVref2	–	Reference voltage terminal 2.

Pin	Name	I/O	Description
70	AVref3	–	Reference voltage terminal 3.
71	NMI	I	Non Maskable Interrupt signal input terminal.
72	VBLK	I	V.Blanking signal input terminal.
73	HBLK	I	H.Blanking signal input terminal.
74	GPI	I	GPI signal input terminal.
75	BIAS4	I	BIAS signal input terminals.
76	BIAS3	I	
77	BIAS2	I	
78	BIAS1	I	
79	DR1	I	DR signal input terminal.
80	DT1	O	DT signal output terminal.

2.27. IC23 and IC37 on the Main Board are using Quad Analog Switches/Multiplexers/Demultiplexers IC YWMC74HC4066F.
Description of this IC is as follows:

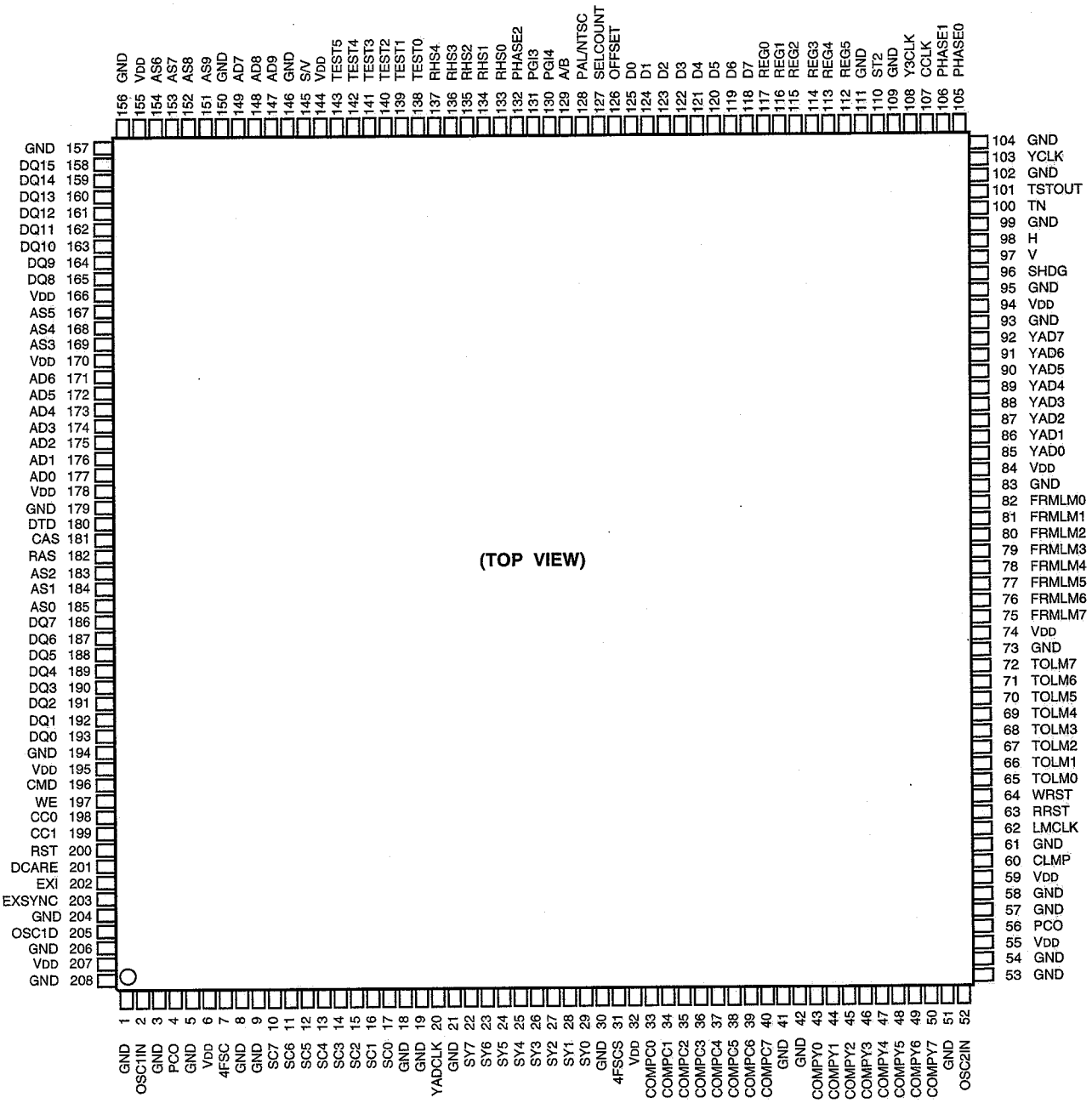


(TOP VIEW)

Truth Table

Input	Switch
Control	I/O – O/I
L	OFF
H	ON

2.28. IC29 and IC43 on the Main Board are using Write Control Gate Array Logic IC YWAJ0034.
Description of this IC is as follows:



Pin	Name	I/O	Description
1	GND	–	Ground terminal.
2	OSC1IN	I	Oscillator input terminal.
3	GND	–	Ground terminal.
4	PCO	O	PCO signal output terminal.
5	GND	–	Ground terminal.
6	VDD	–	Power supply terminal.
7	4FSC	O	4FSC signal output terminal.
8	GND	–	Ground terminal.
9	GND	–	Ground terminal.
10	SC7	I	Serial clock pulse input terminal.

Pin	Name	I/O	Description
11	SC6	I	Serial clock pulse input terminals.
12	SC5	I	
13	SC4	I	
14	SC3	I	
15	SC2	I	
16	SC1	I	
17	SC0	I	
18	GND	–	Ground terminal.
19	GND	–	
20	YADCLK	–	Not used.

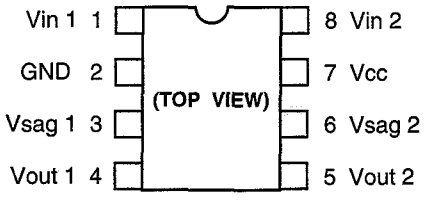
Pin	Name	I/O	Description
21	GND	–	Ground terminal.
22	SY7	I	SY signal input terminals.
23	SY6	I	
24	SY5	I	
25	SY4	I	
26	SY3	I	
27	SY2	I	
28	SY1	I	
29	SY0	I	
30	GND	–	Ground terminal.
31	4FSCS	O	4FSCS signal output terminal.
32	VDD	–	Power Supply termianl.
33	COMPC0	I	COMPC signal input terminals.
34	COMPC1	I	
35	COMPC2	I	
36	COMPC3	I	
37	COMPC4	I	
38	COMPC5	I	
39	COMPC6	I	
40	COMPC7	I	
41	GND	–	Ground terminal.
42	GND	–	Ground terminal.
43	COMPY0	I	COMPY signal input terminals.
44	COMPY1	I	
45	COMPY2	I	
46	COMPY3	I	
47	COMPY4	I	
48	COMPY5	I	
49	COMPY6	I	
50	COMPY7	I	
51	GND	I	Ground terminal.
52	OSC2IN	I	Oscillator input terminal.
53	GND	–	Ground terminal.
54	GND	–	Ground terminal.
55	VDD	–	Power supply terminal.
56	PCO	O	PCO signal output terminal.
57	GND	–	Ground terminal.
58	GND	–	Ground terminal.
59	VDD	–	Power supply terminal.
60	CLMP	O	CLMP signal output terminal.
61	GND	–	Ground terminal.
62	LMCLK	O	LMCLK signal output terminal.
63	RRST	O	R Reset signal output terminal.
64	WRST	O	W Reset signal output terminal.
65	TOLM0	O	TOLM signal output terminals.
66	TOLM1	O	
67	TOLM2	O	
68	TOLM3	O	
69	TOLM4	O	
70	TOLM5	O	
71	TOLM6	O	

Pin	Name	I/O	Description
72	TOLM7	O	TOLM signal output terminal.
73	GND	–	Ground terminal.
74	VDD	–	Power supply terminal.
75	FRMLM7	I	FRMLM signal input terminals.
76	FRMLM6	I	
77	FRMLM5	I	
78	FRMLM4	I	
79	FRMLM3	I	
80	FRMLM2	I	
81	FRMLM1	I	
82	FRMLM0	I	
83	GND	–	Ground terminal.
84	VDD	–	Power supply terminal.
85	YAD0	O	YAD signal output terminals.
86	YAD1	O	
87	YAD2	O	
88	YAD3	O	
89	YAD4	O	
90	YAD5	O	
91	YAD6	O	
92	YAD7	O	
93	GND	–	Ground terminal.
94	VDD	–	Power supply terminal.
95	GND	–	Ground terminal.
96	SHDG	I	SHDG signal input terminal.
97	V	I	V signal input terminal.
98	H	I	H signal input terminal.
99	GND	–	Ground terminal.
100	TN	I	TN signal input terminal.
101	TSTOUT	O	Test signal output terminal.
102	GND	–	Ground terminal.
103	YCLK	I	Y Clock pulse input terminal.
104	GND	–	Ground terminal.
105	PHASE0	I	PHASE signal input terminal.
106	PHASE1	I	PHASE signal input terminal.
107	CCLK	I	C Clock pulse terminal.
108	Y3CLK	I	Y3 Clock pulse terminal.
109	GND	–	Ground terminal.
110	ST2	I	ST signal input terminal.
111	GND	I	Ground terminal.
112	REG5	I	Register signal input terminals.
113	REG4	I	
114	REG3	I	
115	REG2	I	
116	REG1	I	
117	REG0	I	
118	D7	I	Data input terminals.
119	D6	I	
120	D5	I	
121	D4	I	

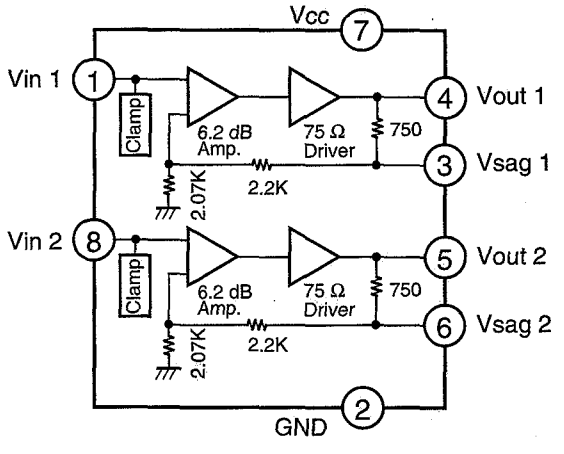
Pin	Name	I/O	Description
122	D3	I	Data input terminals.
123	D2	I	
124	D1	I	
125	D0	I	
126	OFF SET	I	OFF SET signal input terminal.
127	SEL COUNT	I	SEL COUNT signal input terminal.
128	PAL/NTSC	I	PAL/NTSC signal input terminal.
129	A/B	I	A/B signal input terminal.
130	PGI4	I	PGI signal input terminal.
131	PGI3	I	PGI signal input terminal.
132	PHASE2	I	PHASE signal input terminal.
133	RHS0	I	RHS signal input terminal.
134	RHS1	I	
135	RHS2	I	
136	RHS3	I	
137	RHS4	I	
138	TEST0	I	TEST signal input terminal.
139	TEST1	I	
140	TEST2	I	
141	TEST3	I	
142	TEST4	I	
143	TEST5	I	
144	VDD	–	Power supply terminal.
145	S/V	I	S/V signal input terminal.
146	GND	–	Ground terminal.
147	AD9	O	Address signal output terminal.
148	AD8	O	
149	AD7	O	
150	GND	–	Ground terminal.
151	AS9	O	AS signal output terminals.
152	AS8	O	
153	AS7	O	
154	AS6	O	
155	VDD	–	Power supply terminal.
156	GND	–	Ground terminal.
157	GND	–	Ground terminal.
158	DQ15	I/O	DQ signal input/output terminal.
159	DQ14	I/O	
160	DQ13	I/O	
161	DQ12	I/O	
162	DQ11	I/O	
163	DQ10	I/O	
164	DQ9	I/O	
165	DQ8	I/O	
166	VDD	–	Power supply terminal.
167	AS5	O	AS signal output terminals.
168	AS4	O	
169	AS3	O	
170	VDD	–	Power supply terminal.
171	AD6	O	AD signal output terminals.
172	AD5	O	

Pin	Name	I/O	Description
173	ADR 4	O	ADR signal output terminal.
174	ADR 3	O	
175	ADR 2	O	
176	ADR 1	O	
177	ADR 0	O	
178	VDD	–	Power Supply terminal.
179	GND	–	Ground terminal.
180	DTD	O	DTD signal output terminal.
181	CAS	O	Column Address Strobe signal output terminal.
182	RAS	O	Row Address Strobe signal output terminal.
183	AS2	O	AS signal output terminals.
184	AS1	O	
185	AS0	O	
186	DQ7	I/O	DQ signal input/output terminals.
187	DQ6	I/O	
188	DQ5	I/O	
189	DQ4	I/O	
190	DQ3	I/O	
191	DQ2	I/O	
192	DQ1	I/O	
193	DQ0	I/O	
194	GND	–	Ground terminal.
195	VDD	–	Power Supply terminal.
196	CMD	O	CMD signal output terminal.
197	WE	O	Write enable signal output terminal.
198	CC0	O	CC signal output terminals.
199	CC1	O	
200	RST	I	Reset signal input terminal.
201	DC ARE	I	DC ARE signal input terminal.
202	EXI	I	External signal input terminal.
203	EXSYNC	I	External sync signal input terminal
204	GND	–	Ground terminal.
205	OSC1D	–	Not used.
206	GND	–	Ground terminal.
207	VDD	–	Power Supply terminal.
208	GND	–	Ground terminal.

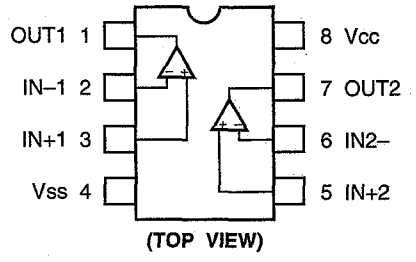
2.29. IC13 on the Main Board is using the 6 dB Video Amplifier with 75Ω Driver IC YWNJM2267VT1. Description of these IC is as follows:



Pin	Name	I/O	Description
1	Vin 1	I	Input terminal for Amplifier 1.
2	GND	–	Ground terminal.
3	Vsag 1	–	Sag compensation terminal for Amplifier 1.
4	Vout 1	O	Output terminal for Amplifier 1.
5	Vout 2	O	Output terminal for Amplifier 2.
6	Vsag 2	–	Sag compensation terminal for Amplifier 2.
7	Vcc	–	Power supply terminal.
8	Vin 2	I	Input terminal for Amplifier 2.



2.30. IC504 and IC505 on the Main Board are using the Dual Operational Amplifier IC NJM3404AM. Description of these IC is as follows:



ADJUSTMENT PROCEDURE

1. Test Equipment Required

- The following Test Equipments are required for adjustment of the Digital AV Mixer WJ-MX20.

- Oscilloscope
- Frequency Counter
- Digital Voltmeter
- Vectorscope
- Waveform Monitor
- Underscanned Colour Video Monitor
- Video Signal Generator
- Audio Generator
- Extension Board (Part Number: YWV0EA1026AN) for (Power Board and Main Board as shown Fig. 1-1.)

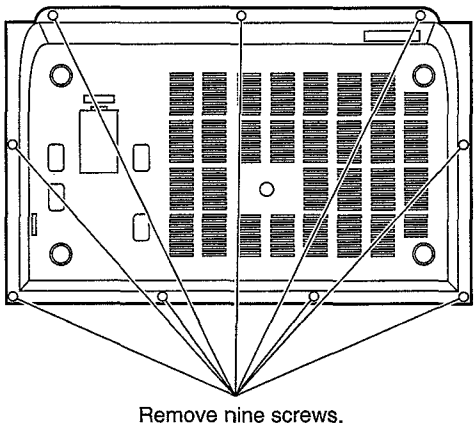
Fig. 1-1

(Extension Board for Switch Board and Main Board as shown Fig. 1-2.)

Fig. 1-2

2. Disassembling Procedure for Adjustment

- Referring to Fig. 2-1, remove nine screws that secure the Upper Cover and remove the Upper Cover.



Remove nine screws.

Fig. 2-1

- Referring to Fig. 2-2, remove five screws that secure the Shield Cover and remove the Shield Cover.
  Disconnect the Flat Cable from CN3 on the Power Board and CN3 on the Main Board.
  Remove five screws that secure the Main Board and remove the Main Board.

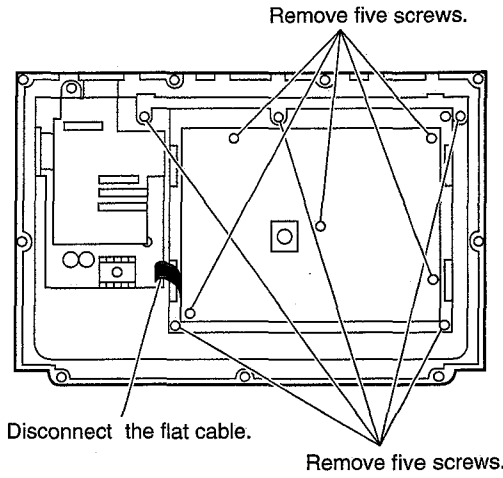


Fig. 2-2

- Referring to Fig. 2-3, connect the Extension Board between CN3 on the Power Board and CN3 on the Main Board.

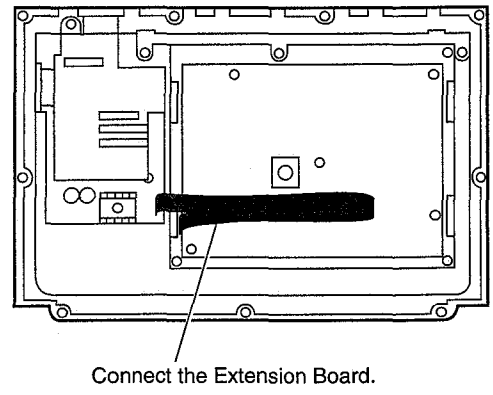


Fig. 2-3

- Connect the Extension Board between CN1 on the Switch Board and CN1 on the Main Board.

3. Connection and Setting Up for Adjustment

- The Fig. 3-1 shows the connection diagram for the adjustment procedure.

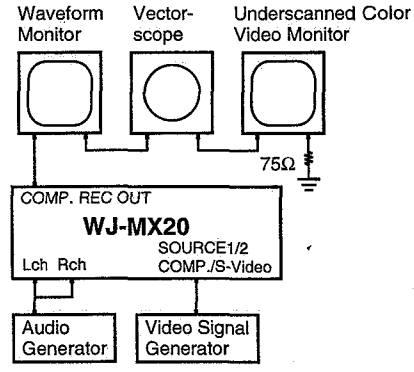


Fig. 3-1

- Connect the Underscanned Colour Video Monitor through Waveform Monitor to the COMP OUT Connector on the REC OUT Section of the Rear Panel.
- Terminate the input terminal of the Underscanned Colour Video Monitor with 75 Ω.
- Connect the probe of the Digital Voltmeter, Oscilloscope or Frequency Counter at the desired Test Point in each adjustment step.
- The adjustments should be done after 10-minute warm up.

4. Adjustment Procedure

- Refer to the Location of the Test Points and Adjusting Controls on page 29.

(1). Subcarrier Frequency Adjustment

Test Point: **TP21 (FSC)** **Main Board**
Adjust: **VR3 (FSC)** **Main Board**

- Disconnect all signals from the Input terminals of the WJ-MX20.
- Connect the Frequency Counter to TP21.
- Adjust VR3 to obtain 17.734476 MHz ± 20 Hz.

(2). Read VCO Adjustment

Test Point: **TP6 (READ VCO)** **Main Board**
Adjust: **L929 (READ VCO)** **Main Board**

- Disconnect all signals from the Source Input Connectors of the WJ-MX20.
- Connect the Digital Voltmeter to TP6.
- Adjust L929 to obtain 1.8 ± 0.1V.

(3). Y Output Gain Adjustment

Test Point: **Recording Out Composite Video Signal Output Connector** **Rear Panel**
Adjust: **VR7 (Y OUTPUT GAIN)** **Main Board**

- Output the White Colour (Default Colour) in the Back Colour by select the Colour Button.
- Connect the terminated Oscilloscope with 75Ω to the Recording Out Composite Video Signal Output Connector on the Rear Panel.
- Adjust VR7 so that the White signal level becomes 525 ± 14 mV as shown in Fig. 4-1.

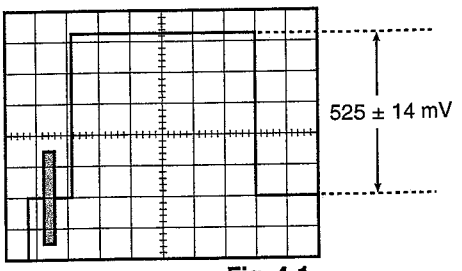


Fig. 4-1

(4). C Output Gain Adjustment

Test Point: **Recording Out Composite Video Signal Output Connector** **Rear Panel**
Adjust: **VR6 (C OUTPUT GAIN)** **Main Board**

- Output the White Colour (Default Colour) in the Back Colour by select the Colour Button.
- Connect the terminated Oscilloscope with 75Ω to the Recording Out Composite Video Signal Output Connector on the Rear Panel.
- Adjust VR6 so that the White signal level becomes 300 ± 6 mV as shown in Fig. 4-2.

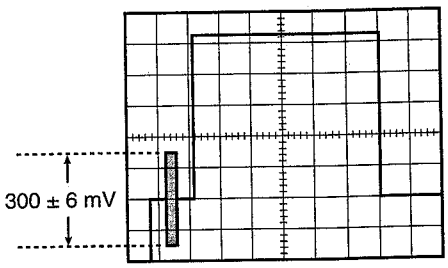


Fig. 4-2

(5). Write A VCO Adjustment

Test Point: **TP2 (WRITE A VCO)** **Main Board**
Adjust: **L72 (WRITE A VCO)** **Main Board**

- Supply the Colour Bar signal to the Source 1 Composite Video Signal Input Connector.
- Press the SOURCE1 Button of the A-Bus.
- Connect the Digital Voltmeter to TP2.
- Adjust L72 to obtain 2.0 ± 0.1V.

(6). Write B VCO Adjustment

Test Point: **TP4 (WRITE B VCO)** **Main Board**
Adjust: **L71 (WRITE B VCO)** **Main Board**

- Supply the Colour Bar signal to the Source 1 Composite Video Signal Input Connector.
- Press the SOURCE1 Button of the B-Bus.
- Connect the Digital Voltmeter to TP4.
- Adjust L71 to obtain 2.0 ± 0.1V.

(7). A-Bus C VCXO Adjustment

Test Point: **TP3 (A-BUS C VCXO)** **Main Board**
Adjust: **L905 (A-BUS C VCXO)** **Main Board**

- Supply the Colour Bar signal to the Source 1 Composite Video Signal Input Connector.
- Press the SOURCE1 Button of the A-Bus.
- Connect the Digital Voltmeter to TP3.
- Adjust L905 to obtain 2.9 ± 0.1V.

(8). B-Bus C VCXO Adjustment

Test Point: **TP20 (B-BUS C VCXO)** **Main Board**
Adjust: **L909 (B-BUS C VCXO)** **Main Board**

- Supply the Colour Bar signal to the Source 1 Composite Video Signal Input Connector.
- Press the SOURCE1 Button of the B-Bus.
- Connect the Digital Voltmeter to TP20.
- Adjust L909 to obtain 2.9 ± 0.1V.

(9). A-Bus Y Gain Adjustment

Test Point: **Recording Out Composite Video Signal Output Connector** **Rear Panel**
Adjust: **VR2 (A-BUS Y GAIN)** **Main Board**

- Supply the Colour Bar (White signal level = 100 %) signal to the Source 1 S-Video Input Connector.
- Connect the terminated Oscilloscope with 75Ω to the Recording Out Composite Video Signal Output Connector.
- Press the SOURCE1 Button of the A-Bus.
- Adjust VR2 so that the White signal level becomes 100 ± 10 % as shown in Fig. 4-3.

Note: Confirm that the White signal level changes linear variation

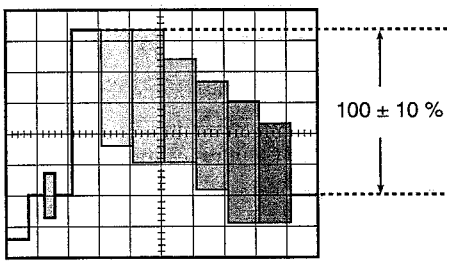


Fig. 4-3

(10). B-Bus Y Gain Adjustment

Test Point: **Recording Out Composite Video Signal Output Connector** **Rear Panel**
Adjust: **VR20 (B-BUS Y GAIN)** **Main Board**

- Supply the Colour Bar (White signal level = 100 %) signal to the Source 1 S-Video Input Connector.
- Press the SOURCE1 Button of the A-Bus and SOURCE2 Button of the B-Bus.
- Connect the Colour Video Monitor to the Preview Output Connector on the Rear Panel.
- Connect the terminated Oscilloscope with 75Ω to the Recording Out Composite Video Signal Output Connector.
- Press the Wipe Button, the Wipe Menu should be displayed on the Colour Video Monitor.
- Select the Corner Wipe Pattern □ by using the Up/Down /Left/Right Buttons so that the both A-Bus and B-Bus pictures have been displayed on the Colour Video Monitor.
- Confirm the White signal level of the A-Bus.
- Adjust VR20 so that the White signal level becomes same level ± 2 IRE (± 14 mV) as A-Bus White signal level as shown in Fig. 4-4.

Note: Confirm that the White signal level changes linear variation

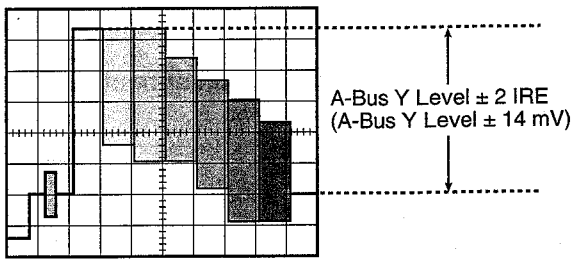


Fig. 4-4

(11). A-B H Phase Adjustment

Test Point: **TP10 (A SYNC)** **Main Board**
TP11 (B SYNC) **Main Board**
Adjust: **VR5 (H PHASE)** **Main Board**

- Supply the Composite Cross-hatch Pattern signal to the Source1 Composite Video Input Jack.
- Press the Mix/Wipe Selection Button.
- Press the SOURCE1 Button of the A-Bus and the B-Bus.
- Connect the Video Monitor to the Preview Output Connector on the Rear Panel.
- Set the WIPE/MIX Control to the Center position.
- Adjust VR5 so that the Cross-hatch Pattern signal of A-Bus and B-Bus becomes coincides on the Video Monitor as shown in Fig. 4-5.

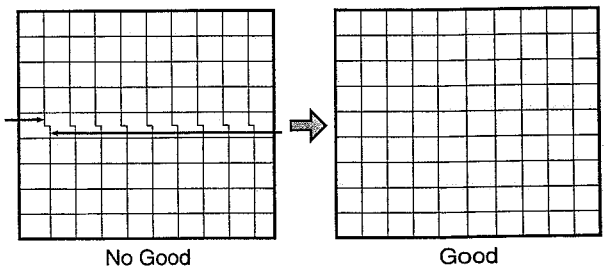
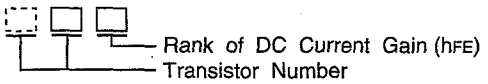


Fig. 4-5

CHIP COMPONENTS

1. Chip Transistor

The transistor number is indicated on the top surface of the chip transistor using two alphabet letters or one numerical number and two alphabet letters.



Transistor Number

(Chip Transistor)

Letter	Transistor No.	Letter	Transistor No.
A	2SB709	X	2SD602A
B	2SB709A	Y	2SD601
C	2SB710	Z	2SD601A
D	2SB710A	1A	2SB799
E	2SA1022	1B	2SB814
F	2SA1034	1C	2SB902
H	2SA1035	1F	2SK321
I	2SB792	1K	2SK316
K	2SC2778	1L	2SK247
P	2SD814	1M	2SJ84
Q	2SD813	1N	2SK199
R	2SC2480	1O	2SK198
S	2SC2405	1T	2SC3077
T	2SC2406	1X	2SC2845
U	2SC2404	1Z	2SD1030
V	2SC2295	2B	2SK374
W	2SD602	2C	2SK116
BQ	2SB766A	UMT	2SC4081

(Small Chip Transistor)

Letter	Transistor No.
A	2SB1218
B	2SB1218A
D	2SB1219A
U	2SC3931
W	2SD1820
X	2SD1820A
Y	2SD1819
E3	2SA1226
OS	2SB1219
UC	2SA1532
YU	2SC3938

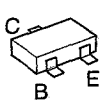
(Pair Transistor)

Letter	Transistor No.	Letter	Transistor No.
5R	XN1501	5H	XP4501
7S	XN1601	5C	XP4601
5H	XN4501	5H	XP4501
5C	XN4601	5L	XP5501
5L	XN5501	4N	XP5601
4N	XN5601	7S	XP6501
5N	XN6501	7W	XP6435
7W	XN6435	7F	XP6534
7F	XN6534	X1	UMX1
5R	XP1501	Z1	UMZ1
7S	XP1601		

Example: WQ → 2SD602-Q
YQ → 2SD601-Q
1BS → 2SB814-S

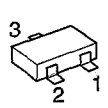
Appearance and Symbols

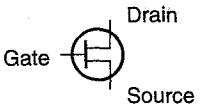
Transistor



C: Collector
B: Bass
E: Emitter

FET

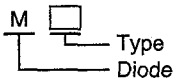




	1	2	3
Eacept 2SK199	Drain	Source	Gate
2SK199	Gate	Drain	Source

2. Chip Diode

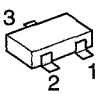
The diode number is indicated on the top surface of the chip diode using two alphabet letters.

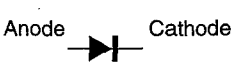


Diode Number

Letter	Diode No.	Letter	Diode No.
MA	MA151A	MI	MA152K
MB	MA152A	MK	MA28W-B
MC	MA153	ML	MA28T-A
MD	MA28-A	MN	MA151WA
ME	MA28-B	MO	MA152WA
MF	MA28W-A	MT	MA151WK
MH	MA151K	MU	MA152WK
MH	MA141K	6.2	MA3062
MC	MA143	SMD	RD421D

Appearance and Symbol

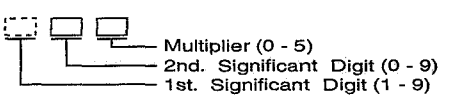




	1	2	3
MA28/MA28W/MA28T	–	Anode	Cathode
MA151K/MA152K	–	Anode	Cathode
MA151A/MA152A	–	Cathode	Anode
MA151WK/MA152WK	Anode	Anode	Cathode
MA151WA/MA152WA	Cathode	Cathode	Anode
MA153	Cathode	Anode	Common
MA141K	–	Anode	Cathode
MA143	Anode	Cathode	Common
MA3062	Anode	–	Cathode
RD421D	Anode	–	Cathode

3. Chip Resistor

The resistor value is indicated on the bottom surface of the chip resistor using three digit numbers.



Example:

330 → $33 \times 10^0 = 33\ \Omega$
561 → $56 \times 10^1 = 560\ \Omega$
123 → $12 \times 10^3 = 12\ k\Omega$

Note: Zero ohm resistor (jumper chip) is colored red or green.

4. Chip Capacitor

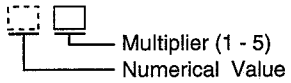
The capacitive value of replacement chip capacitors is indicated on the bottom surface. original parts do not have value indication.

If the capacitive value is less than 100 pF, the value will be indicated by one or two digit number expressing the capacity directly in pF.

Example:

0.5 → 0.5 pF 2.5 → 2.5 pF
.75 → 0.75 pF 33 → 33 pF
1 → 1 pF 82 → 82 pF

If the capacitive value is 100 pF or greater, the value will be indicated by an alpha-numeric code. The letter precedes the number and expresses a numerical value to be multiplied by the number which follows.



Numerical Value

Letter	Value	Letter	Value
A	10	N	33
B	11	P	36
C	12	Q	39
D	13	R	43
E	15	S	47
F	16	T	51
G	18	U	56
H	20	V	62
J	22	W	68
K	24	X	75
L	27	Y	82
M	30	Z	91

* Letters I and O are not used.

Example: A1 → $10 \times 10^1 = 100$ pF
N2 → $33 \times 10^2 = 3300$ pF
S3 → $47 \times 10^3 = 47000$ pF

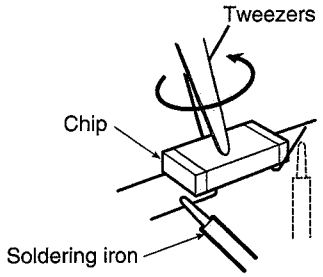
5. Precautions in replacing the chip component

1. Make sure that the unit is turned OFF when replacing the chip.
2. Use tweezers to prevent any damage to the chip surface.
3. Do not re-use the chips after removal.
4. Do not rub the electrode of chips.
5. Do not subject the chips to excessive stress.
6. It is recommended that a pencil-type soldering iron to be used.
7. The solder whose diameter is less than 0.5 mm is recommended.
8. Do not heat the chip beyond 3 second.
9. Maintain temperature control under 260°C (500°F) when soldering.

5-1. Removal (Transistor, Diode, Resistor and Capacitor)

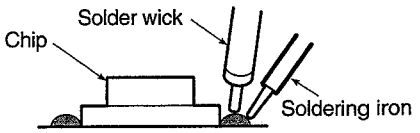
1. Add the solder to both ends of the chip (three leads for chip transistor).
2. While attaching the soldering iron to both ends of the chip (three leads for chip transistor) as shown below, remove the chip by turning with tweezers.

Note: Be careful not to damage other chips.

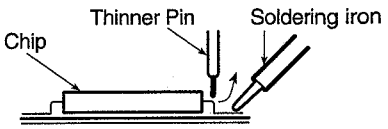


5-2. Removal (IC)

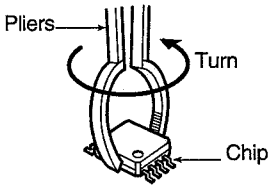
1. Add the solder wick and soldering iron to each lead of the IC and remove solder.



2. Add the soldering iron to each lead of the IC and left each lead of the IC using thinner pin.

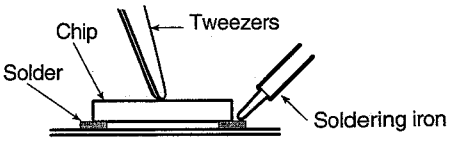


3. Remove IC turning it with pliers.

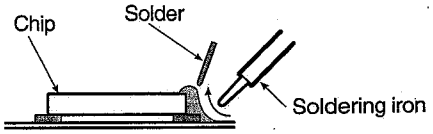


5-3. Mounting

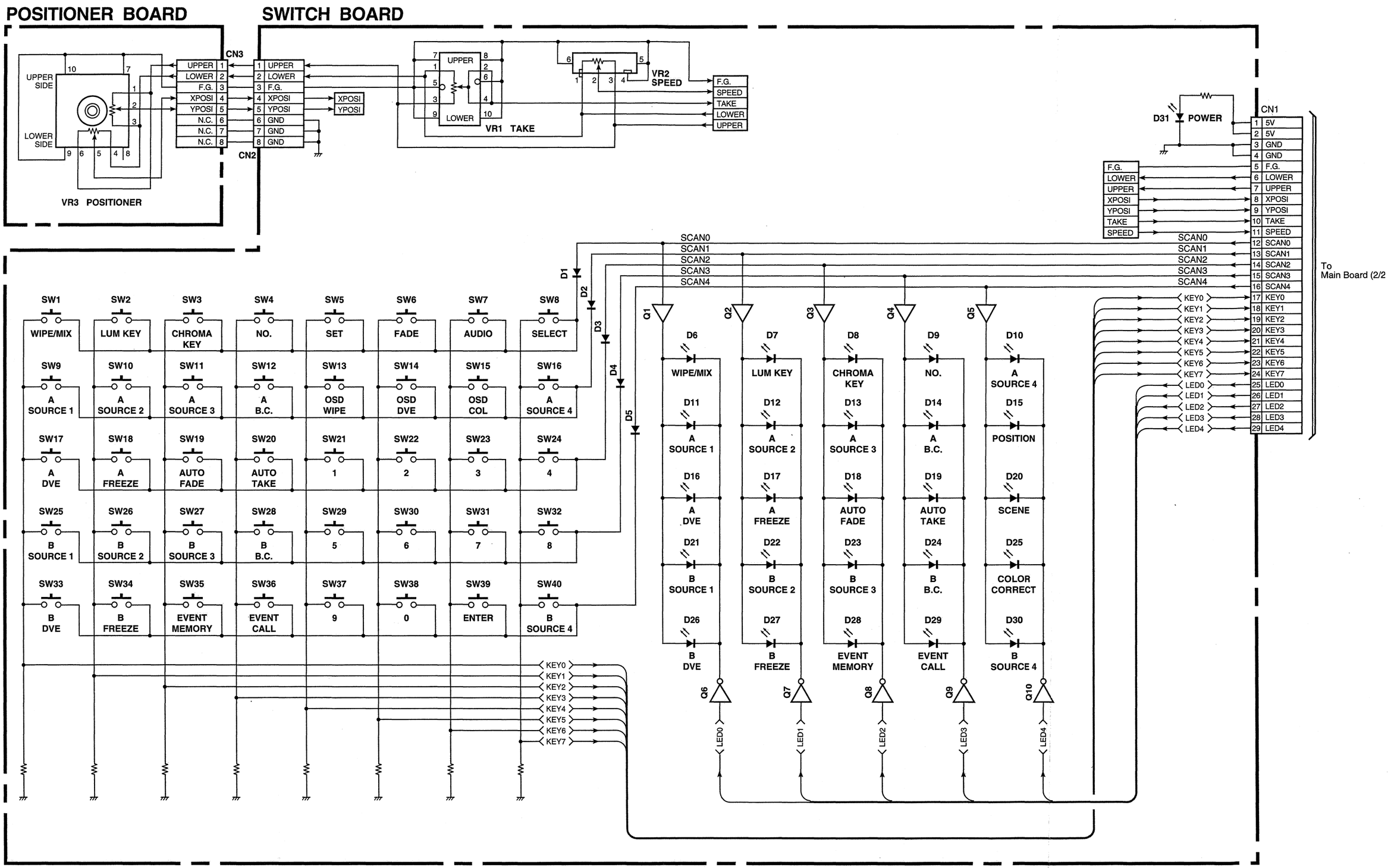
1. Place the solder thinly on the chip mounting foil.
2. Solder the chip temporarily while holding the chip with the tweezers.



3. Solder both ends of chip (three leads for chip transistor).



BLOCK DIAGRAM OF SWITCH BOARD



BLOCK DIAGRAM OF MAIN BOARD (1/2)

MAIN BOARD

CN5(1/3)
SOURCE 1 S-C 1
SOURCE 1 S-Y 4
SOURCE 1 COMP 8
SOURCE 1 BIAS 6
SOURCE 2 S-C 9
SOURCE 2 S-Y 12
SOURCE 2 COMP 16
SOURCE 2 BIAS 14
SOURCE 3 S-C 17
SOURCE 3 S-Y 20
SOURCE 3 COMP 24
SOURCE 3 BIAS 22
SOURCE 4 S-C 25
SOURCE 4 S-Y 28
SOURCE 4 COMP 32
SOURCE 4 BIAS 30

Q38 BUFFER
Q39 BUFFER
Q40 BUFFER
BIAS1
Q41 BUFFER
Q42 BUFFER
Q43 BUFFER
BIAS2
Q44 BUFFER
Q45 BUFFER
Q46 BUFFER
BIAS3
Q47 BUFFER
Q48 BUFFER
Q49 BUFFER
BIAS4

CN3
DGND 1
D5V 2
AGND 3
A5V 4
+12V 5
GND 6
FGND 7
FGND 8
To Power Board . . CN3
DGND
D5V
A5V
+12V

ASEL0
ASEL1
IC20 SELECTOR
IC21 SELECTOR
SVSELA
IC19
IC23(2/4) SWITCH
IC23(3/4) SWITCH
BSEL0
BSEL1
IC34 SELECTOR
IC35 SELECTOR
SVSELB
IC18
IC37(3/4) SWITCH
IC37(2/4) SWITCH

IC511 SYNC SEPARATOR
IC512 SYNC SEPARATOR
Q106,Q107 AMP.
Q108-Q111 AMP.
Q119,Q120 AMP.
Q121-Q124 AMP.
Q105 BIAS
Q100 BUFFER
CF10,CF11 FILTER
VR2 (A-BUS Y GAIN)
Q101-Q104 AMP.
IC900 SWITCH
Q131 BIAS
Q125 BUFFER
CF12,CF13 FILTER
VR20 (B-BUS Y GAIN)
Q126-Q129 AMP.
IC901 SWITCH
VR5 (H PHASE A-B)
IC47 +5V
IC50 +5V

TP10 (ASYNC)
TP15
TP16 (Y GAIN)
TP11 (H PHASE A-B)
TP17
TP18
Q114 BUFFER
Q115 BUFFER
Q139 BUFFER
Q135 BUFFER
Q133 BUFFER
Q130 BUFFER
Q151 BIAS
Q150 BIAS
Q113 CLAMP
Q132 CLAMP
Q511 BUFFER
Q513 BUFFER

IC25 A/D CONVERTER
VINB DA0-DA7 9-16 SY0-SY7 22-29
DB0-DB7 21-28 SC0-SC7 10-17
VINA
IC39 A/D CONVERTER
VINB DA0-DA7 9-16 SY0-SY7 22-29
DB0-DB7 21-28 SC0-SC7 10-17
VINA

IC33,D13 L72 (WRITE A VCO) OSC
TP2 (WRITE A VCO)
FILTER Q117
TP3 (A-BUS C VCXO)
Q145,X2 L905 (A-BUS C VCXO) OSC
Q118 FILTER
IC44,D15 L71 (WRITE B VCO) OSC
TP4 (WRITE B VCO)
FILTER Q137
TP20 (B-BUS C VCXO)
Q146,X3 L909 (B-BUS C VCXO) OSC
Q138 FILTER

IC26 Y/C SEPARATOR
CLOUT D0-D7 33-40 COMPC0
VIN CLK 45 D0-D7 31 COMPC7
YOUT C0-C7 25-32 43-50 COMPY0
4FSCS
COMPY7
IC40 Y/C SEPARATOR
CLOUT D0-D7 33-40 COMPC0
VIN CLK 45 D0-D7 31 COMPC7
YOUT C0-C7 25-32 43-50 COMPY0
4FSCS
COMPY7

IC29 WRITE CONTROL
EXSYNC 203
EXI 202
SY0-SY7
SC0-SC7
OSC1IN
PCO
CLMP
DQ0-DQ15
AS0-AS2
CC1
CC0
WE
AS3-AS9
AD0-AD9
CMD
RAS
CAS
DTD
Y3CLK
YCLK
S/V 145
H 96
V 97
YAD0-YAD7 SHDG 85-92, 96
ST2, REG0-REG5 D0-D7
D0B-D7B, ST2B REG0B-REG5B
IC43 WRITE CONTROL
EXSYNC 203
EXI 202
SY0-SY7
SC0-SC7
OSC1IN
PCO
CLMP
DQ0-DQ15
AS0-AS2
CC1
CC0
WE
AS3-AS9
AD0-AD9
CMD
RAS
CAS
DTD
Y3CLK
YCLK
S/V 145
CCLK 107
H 96
V 97
A/B 129
VD5V
YAD0-YAD7 SHDG 85-92 96
ST2, REG0-REG5 D0-D7
D0B-D7B, ST2B REG0B-REG5B

IC28 LINE MEMORY
75-82 1-4 9-12 DO0-DO7 RE 5
WE 20
65-72 13-16, 21-24 TOLM0-TOLM7
62 8 RCLK 17 WCLK
63 6 RSTR
64 19 RSTW
IC42 LINE MEMORY
75-82 1-4 9-12 DO0-DO7 RE 5
WE 20
65-72 13-16, 21-24 TOLM0-TOLM7
62 8 RCLK 17 WCLK
63 6 RSTR
64 19 RSTW

IC30 CACHE D-RAM
158-165 186-193 DQ0-DQ15
183-185 26-28 AS0-AS2
199 4 CC1
198 5 CC0
197 6 WE
151-154,167-169 42-44,61-64 AS3-AS9
147-149,171-177 32-34,38-41,67-69 AD0-AD9
196 8 CMD
182 29 RAS
181 30 CAS
180 31 DTD
108 10 K
11,13,14,16,19,21-24, 47,49,50,52,55,57,58,60
IC46 CACHE D-RAM
158-165 186-193 DQ0-DQ15
183-185 26-28 AS0-AS2
199 4 CC1
198 5 CC0
197 6 WE
151-154,167-169 42-44,61-64 AS3-AS9
147-149,171-177 32-34,38-41,67-69 AD0-AD9
196 8 CMD
182 29 RAS
181 30 CAS
180 31 DTD
108 10 K
11,13,14,16,19,21-24, 47,49,50,52,55,57,58,60

IC59 LINE MEMORY
DO7 12 102 CH4/TD7
DO6 11 101 CH3/TD6
DI7 13 CH2/TD5
DO5 10 97
DI6 14 96 CH1/TD4
DO4 9 15 99 CH0
DI5 16 94 WP3/TD2
DO3 4 21 93 WP2/TD1
DI4 3 22 92 WP1/TD0
DO2 2 23 90 WP0
DI2 1 24 98 LMRST
DO1
DI1
DO0
DI0
RSTR 6 19
RSRW 9
RCLK
WCLK 17
5 RE 20 WE
IC62 SYNC GENERATOR
OSC1 43 OSC
IC56,D7, D8,X5
TP7 VD5V
VR3 (FSC)
IC48 VD5V
Q2 BUFFER
CHAR 109
IC49 VD5V
SYNC
IC64 +12V
+9V REG
CN4
1 CHARIN
2 GND
3 SYNC
4 GND
5 +9VOUT
6 GND
7 KB15SW
8 B
9 R
10 G
To Titler
KBB 108
KBR 106
KBG 107
IC513 BUS BUFFER
16 1Y2 1A2 4 1 Y3C
18 1Y1 1A1 3
12 1Y4 1A4 8 156 YCLK
14 1Y3 1A3 6
RCLK 152 CCLK
TP6 (READ VCO)
IC53,D930 L929(READ VCO) OSC
OSC2IN 159
Q3 FILTER
HPC 3
AIN0-AIN7,SHGA 111-119 AIN0-AIN7 SHGA
BIN0-BIN7,SHGB 122-130 BIN0-BIN7 SHGB
D0B-D7B,ST1B REG0B-REG5B 66-72 74-80
ST1 REG0-REG5 D0-D7
5-8 10-13 RECC0-RECC7
17-24 RECY0-RECY7
32-35 37-40 PRVC0-PRVC7
47-54 PRVY0-PRVY7
TP9 (HD)
TP8 (VD)
HD 59 HD
VP 61 VD
HBLK
VBLK
IC101
IC100
FS4 4 FS4
2YCLK 15 2YCLK
SYNC 56 SYNC
TP21 (FSC)
IC58 CHARACTER GENERATOR
CCLK 8
OSDCS 2
OSDDAT 3
OSDCLK 1
OSDRST 4
OSCIN
CS
DATA
CLK
RESET
VR VG VB BLK1
VSYNC 19
HSYNC 20
64 63 62 65
OSDR OSDG OSDB OSD
16 17 18 11

CN5(2/3)
SOURCE 1R GND 33
SOURCE 1R 35
SOURCE 1L 37
SOURCE 1L GND 36
SOURCE 2R GND 38
SOURCE 2 R 40
SOURCE 2 L 42
SOURCE 2L GND 41
SOURCE 3R GND 43
SOURCE 3 R 45
SOURCE 3 L 47
SOURCE 3L GND 46
SOURCE 4R GND 48
SOURCE 4 R 50
SOURCE 4 L 52
SOURCE 4L GND 51

IC500 ELECTRONIC VR
IC501 ELECTRONIC VR
IC502 ELECTRONIC VR
IC503 ELECTRONIC VR
IN2 OUT2 IN1 CONT1 OUT1
FADE1
FADE2
FADE3
FADE4
IC504(1/2) MIXING
IC505(1/2) AMP.
Q508 BIAS
IC504(2/2) MIXING
IC505(2/2) AMP.

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REC OUT L 54
REC OUT R 56
REC OUT S-C 57
REC OUT S-Y 60
REC OUT COMP 64
PRV OUT COMP 66
GPI 68
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OPEN 76

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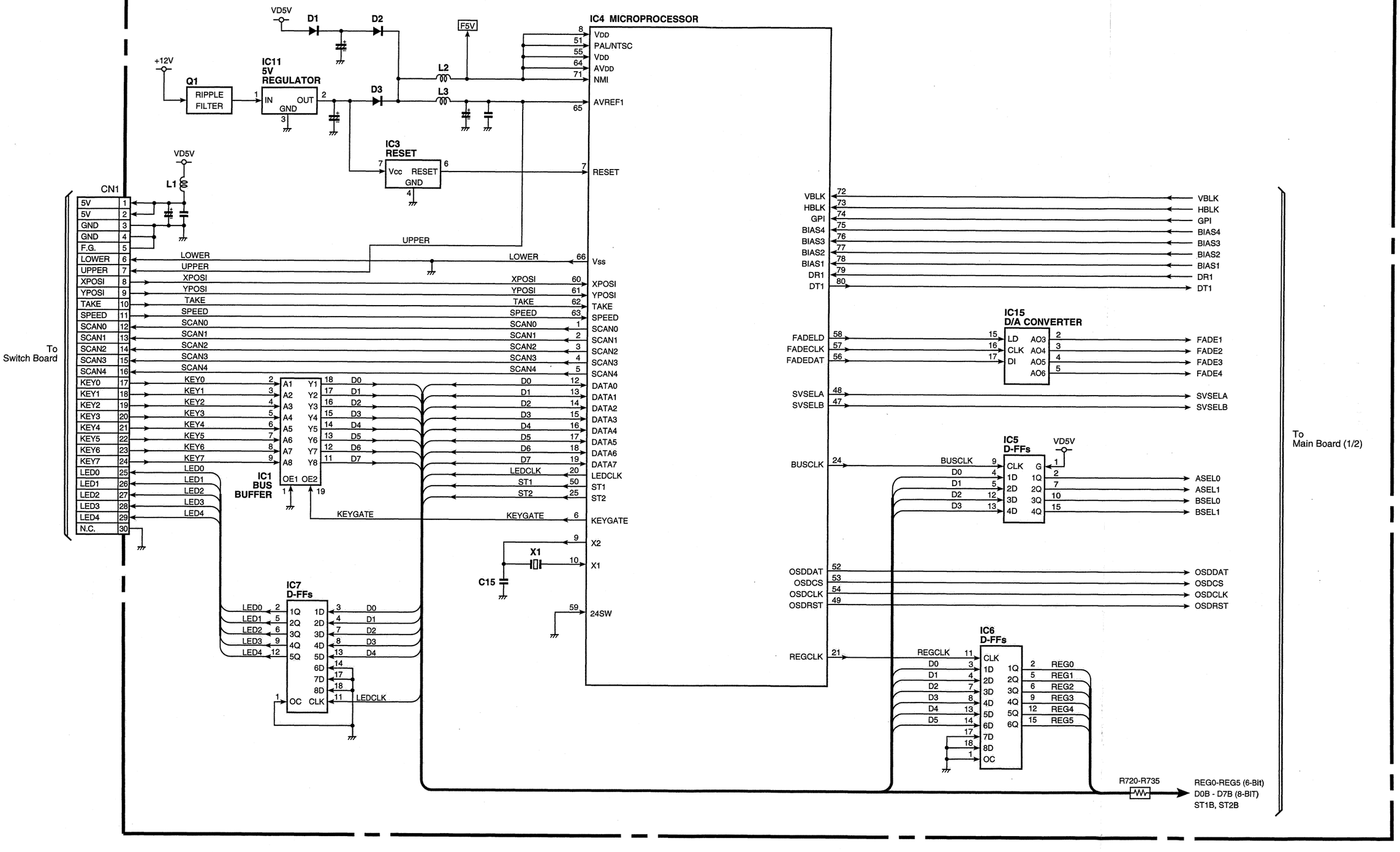
Q140 BUFFER
Q12 BUFFER
IC14(1/2) AMP.
Q141 BUFFER
Q17 BUFFER
IC13(1/2) AMP.
Q20 MIX
IC13(2/2) AMP.
Q36 MIX
Q37 BUFFER TOGPI
VR6 (C OUTPUT GAIN)
Q9-Q11 AMP.
CF5 FILTER
Q5,Q6 BUFFER
Q13 BIAS
Q14,15, Q550 AMP.
CF6 FILTER
Q7,Q8 BUFFER
VR7 (Y OUTPUT GAIN)
Q28 BUFFER
Q25-Q27 AMP.
CF7 FILTER
Q21,Q22 BUFFER
Q29 BIAS
Q33 BUFFER
Q30-Q32 AMP.
CF8 FILTER
Q23,Q24 BUFFER
IC12 VD5V SYNC
IC65 RS422 TRANSCEIVER
A B Z Y D R
DT1
DR1

IC52 D/A CONVERTER
BOUT B1-B8 6-13
A1-A8 1-4, 25-28
CLKB
AOUT CLKA
COUT 20
YOUT 22
FS4
2YCLK
IC55 D/A CONVERTER
CLKA
CLKB
BOUT B1-B8 6-13
A1-A8 1-4, 25-28
COUT 20
YOUT 22

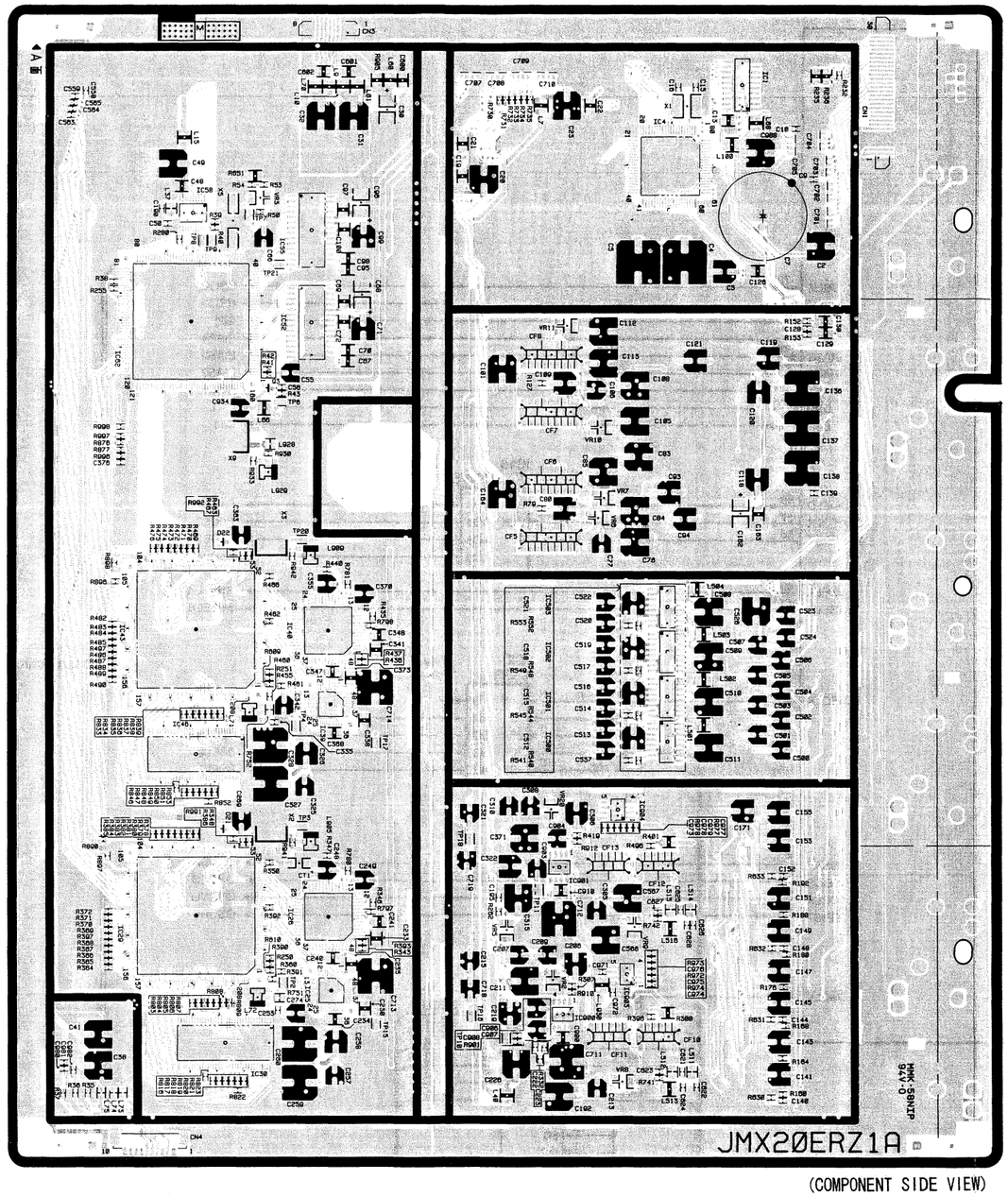
D0B-D7B (8-BIT)
REG0-REG5 (6-BIT)
STB1B, ST2B
VBLK
HBLK
GPI
BIAS1
BIAS2
BIAS3
BIAS4
DR1
DT1
FADE1
FADE2
FADE3
FADE4
SVSELA
SVSELB
OSDCS
OSDDAT
OSDCLK
OSDRST
To Main Board (2/2)

BLOCK DIAGRAM OF MAIN BOARD (2/2)

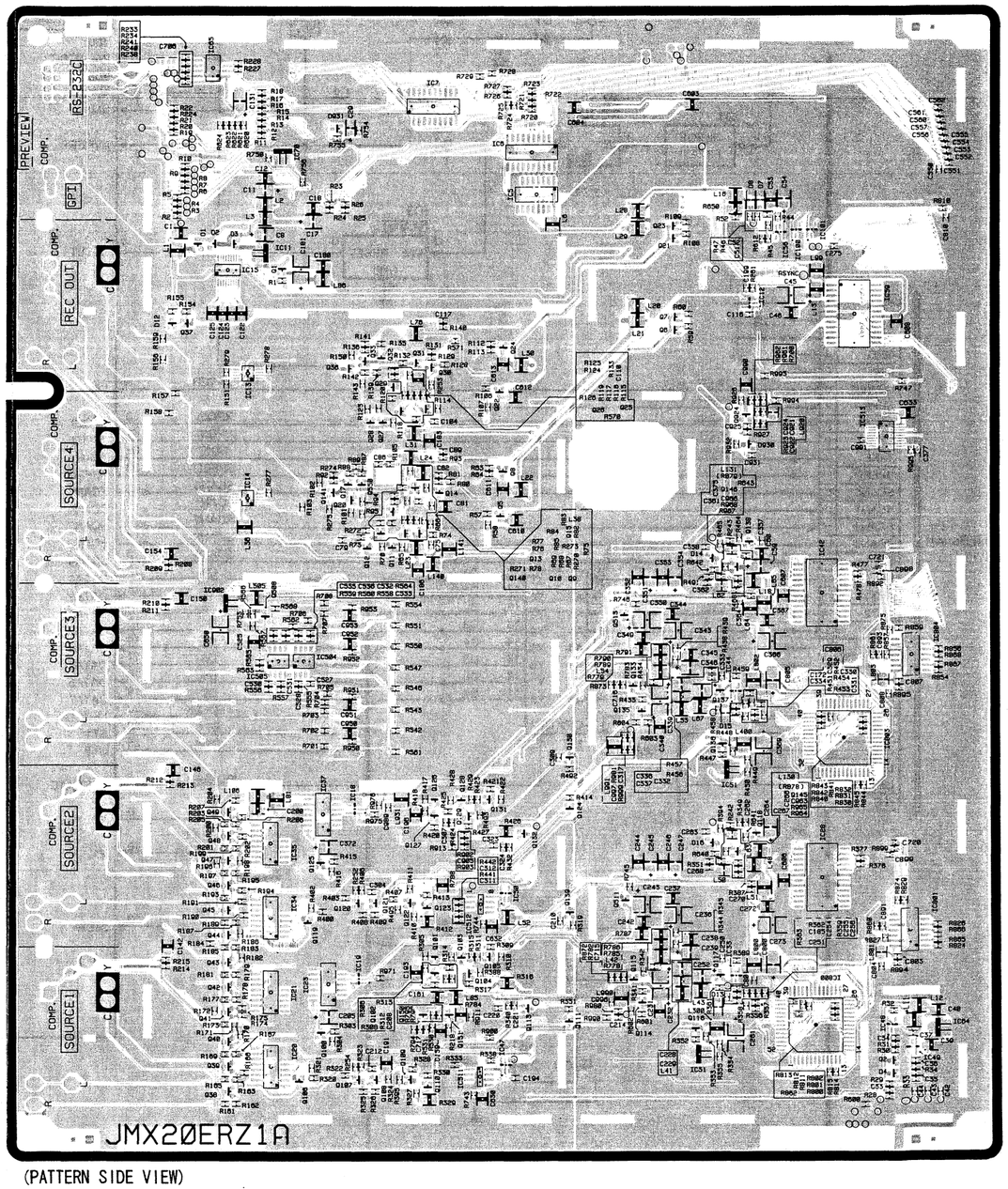


CONDUCTOR VIEW OF MAIN BOARD

MAIN BOARD



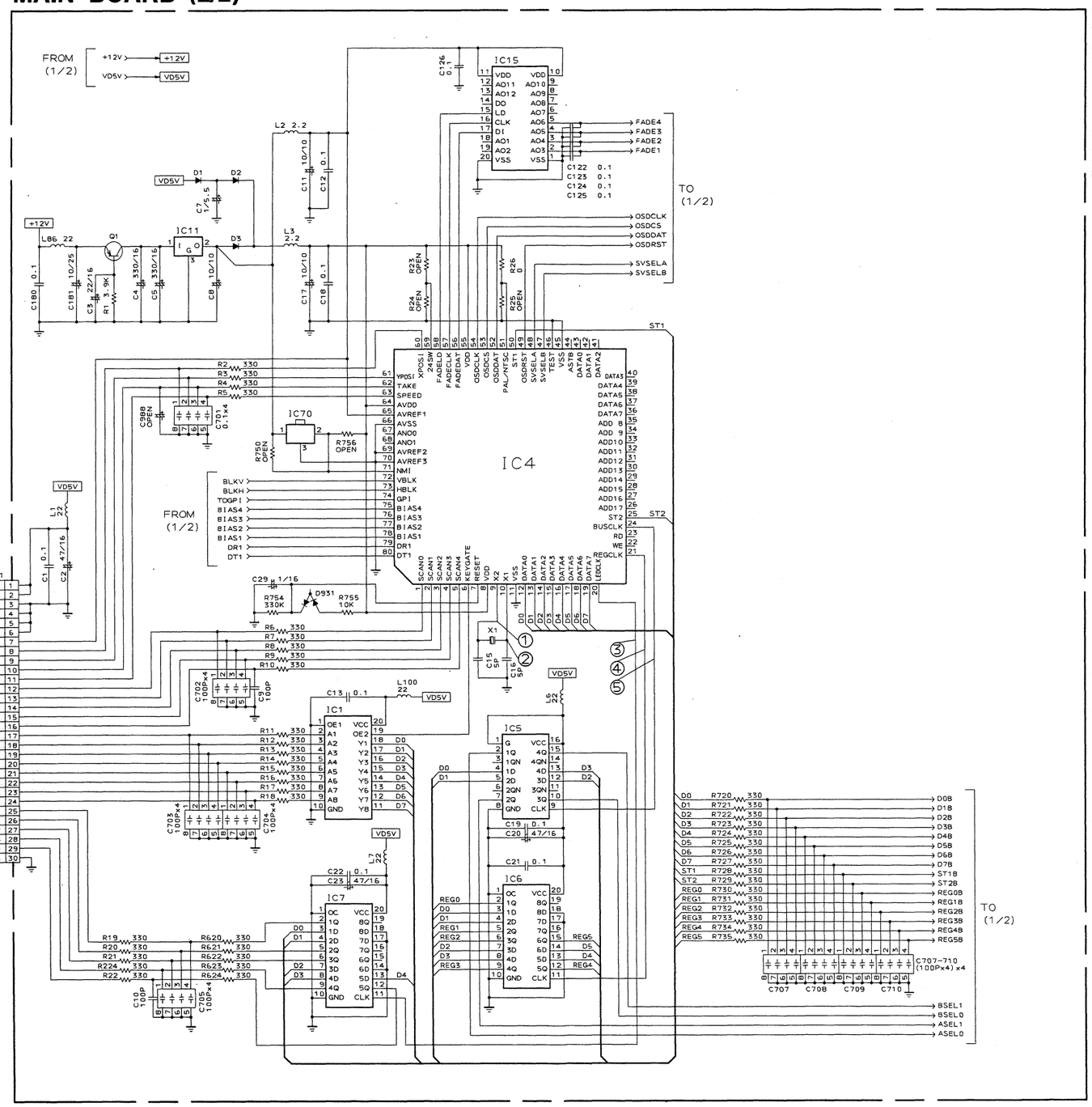
(COMPONENT SIDE VIEW)



(PATTERN SIDE VIEW)

SCHEMATIC DIAGRAM OF MAIN BOARD (2/2)

MAIN BOARD (2/2)



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MAIN BOARD		Q28	D6
IC1	E4	Q29	D7
IC4	E3	Q30	D7
IC5	E7	Q31	D7
IC6	E7	Q32	D6
IC7	E7	Q33	D6
IC11	D6	Q36	D6
IC12	D8	Q37	D6
IC13	D6	Q38	A6
IC14	C6	Q39	A6
IC15	D6	Q40	A6
IC18	B6	Q41	A6
IC19	A6	Q42	A6
IC20	A6	Q43	B6
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IC25	A2	Q46	B6
IC26	B2	Q47	B6
IC28	B8	Q48	B6
IC29	B1	Q49	B6
IC30	A2	Q100	A6
IC31	A8	Q101	B7
IC33	A8	Q102	A7
IC34	B6	Q103	B7
IC35	B6	Q104	A7
IC37	B6	Q105	B7
IC39	C2	Q106	A6
IC40	C2	Q107	A6
IC42	C8	Q108	A6
IC43	C1	Q109	A7
IC44	C8	Q110	A7
IC46	B1	Q111	A7
IC47	A7	Q113	A7
IC48	A9	Q114	A7
IC49	A9	Q115	A8
IC50	B7	Q116	A8
IC51	B8	Q117	A8
IC52	D2	Q118	B8
IC55	D2	Q119	B6
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IC58	E1	Q121	B6
IC59	D8	Q122	B7
IC62	D1	Q123	B7
IC64	A9	Q124	B7
IC65	E6	Q125	B6
IC70	E6	Q126	B7
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IC101	D8	Q128	B7
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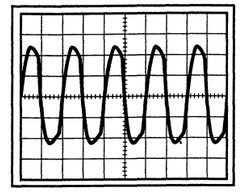
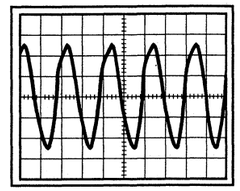
IC513	D8	Q138	C8
IC900	A3	Q139	B7
IC901	B3	Q140	C6
IC902	C6	Q141	C6
		Q145	B8
Q1	D6	Q146	C8
Q2	A8	Q150	A7
Q3	D2	Q151	A7
Q5	C7	Q508	C6
Q6	D8	Q511	B7
Q7	D8	Q513	C7
Q8	D7	Q550	C6
Q9	C7	Q924	D8
Q10	C7		
Q11	C7	D1	D6
Q12	C6	D2	D6
Q13	C7	D3	D6
Q14	C7	D4	A9
Q15	C7	D7	E8
Q17	C6	D8	E8
Q20	C6	D12	D6
Q21	E8	D13	A8
Q22	D7	D14	C8
Q23	E8	D15	C8
Q24	D7	D16	B8
Q25	D7	D930	A8
Q26	D7	D931	E6

MAIN BOARD (2/2)

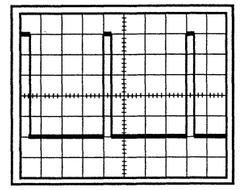
1. 20ns/DIV, 1V/DIV



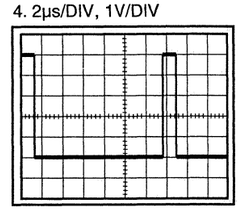
2. 20ns/DIV, 0.5V/DIV



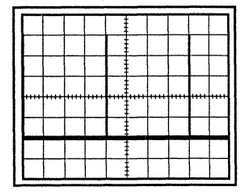
3. 1ms/DIV, 1V/DIV



4. 2µs/DIV, 1V/DIV



5. 5ms/DIV, 1V/DIV



MAIN BOARD (2/2)

	IC1	IC3	IC5	IC6	IC7	IC11	IC15
Pin 1	0	0.9	5.0	0	0	11.3	0
2	0		0	4.9	1.3	0	2.2
3	0	1.9	5.0	1.3	1.3	5.1	2.7
4	0	0	1.4	0.8	0.8		0
5	0	1.2	0.8	4.9	0.8		0
6	0	5.1	5.0	4.9	0		0
7	0	5.1	0	0.1	0.1		0
8	0		0	0.1	0.1		0
9	0		0	4.9	0		0
10	0		5.0	0	0		4.8
11	0		0	0	0		4.8
12	0		0.1	4.9	0.8		0
13	0.1		0.1	0.8	0.8		0
14	0.8		5.0	0.1	0		0
15	0.1		0	4.9	0		0
16	0.1		5.0	0	0		0
17	0.8			0	0		0
18	1.4			0	0		0
19	4.8			0	0		0
20	5.0			5.0	5.0		0

	B	C	E
Q1	10.7	11.3	11.4

< Index >	
MAIN BOARD (2/2)	
IC1	B2
IC4	C3
IC5	B3
IC6	A3
IC7	A2
IC11	C2
IC15	D3
IC70	C2
Q1	C1
D1	D2
D2	D2
D3	D2
D931	B2

MAIN BOARD (1/2)

	IC12	IC13	IC14	IC18	IC19	IC20	IC21	IC23	IC28	IC31	IC33	IC34	IC35	IC37	IC42	IC44	IC47	IC50	IC51	IC53	IC56	IC59
Pin 1	4.6	2.3	2.2	4.9	4.6	2.3	-	0	1.8	4.3	4.9	2.3	-	0	1.3	5.0	4.9	5.0	4.3	5.0	5.1	0
2	1.7	0	0	4.8	0	2.3	-	-	1.7	1.3	2.5	2.3	0.2	-	1.2	2.5	4.4	4.4	0	2.6	2.6	0
3	0	2.5	2.3	0	0	2.3	-	2.3	1.5	0	0	2.3	0.2	2.3	0.8	0	0	0	1.3	0	0	0
4	4.3	2.5	2.3	0	4.6	2.4	-	2.3	1.6		2.5	2.4	0.5	2.3	0.6	2.5	4.6	4.6		2.6	2.6	0
5	4.6	2.5	2.8	4.9	4.6	2.4	-	0	0		4.9	2.3	0.6	4.8	0	5.0	4.9	5.0		5.0	5.1	0
6		2.5	-			0	0	4.6	4.3			2.3	0	0	4.3		1.7					4.6
7		4.9	4.9			0	0	0	0			0	0	0	0		1.5					0
8		2.3	2.8			0	0	2.3	2.6			0	0	2.4	2.7							2.3
9						0	0	2.3	1.7			0	0	2.3	1.4							0
10						0	0	-	1.2			5.0	5.0	-	0.2							0
11						2.4	2.3	0	1.2			2.3	2.3	0	0.3							0
12						2.4	2.3	0	2.2			2.3	2.3	0	1.5							0
13						2.4	2.3	0	2.3			2.3	2.4	0	1.8							0
14						2.4	2.4	4.6	1.7			2.3	2.4	4.9	0.4							0
15						2.4	2.4		1.7			2.3	2.4		0.4							0
16						4.9	4.9		1.9			4.9	4.9		2.6							0
17									2.6						2.7							2.3
18									4.9						4.9							4.6
19									4.9						4.9							4.6
20									0						0							0
21									1.8						1.0							0
22									1.9						1.5							0
23									2.2						2.1							0
24									2.8						2.2							0

	IC64	IC500	IC501	IC502	IC503	IC504	IC505	IC511	IC512	IC513
Pin 1	11.2	5.5	5.5	5.5	5.5	4.4	4.4	4.5	4.5	0
2	9.1	8.8	8.8	8.8	8.8	4.4	4.4	3.1	2.2	2.5
3	0	0	0	0	0	4.4	4.4	4.9	4.9	0.1
4		0	0	0	0	0	0	0	0	2.5
5		3.2	0.3	0	0	4.4	4.4	4.2	4.3	0.1
6		0	0	0	0	4.4	4.4	1.3	1.3	2.3
7		2.7	2.7	2.8	2.8	4.4	4.4	1.4	1.5	0.1
8		5.5	0	0	0	8.9	8.9	4.9	5.0	2.3
9		5.5	5.5	6	6					0.1
10		3.4	3.4	3.4	3.4					0
11		3.8	3.8	3.8	2.4					0
12		-	-	-	-					1.9
13		-	-	-	-					0
14		9	9	9	9					1.9
15		3.8	3.8	3.8	3.8					0
16		3.4	3.4	3.4	3.4					2.4
17										0
18										2.4
19										0
20										4.6
21										
22										
23										
24										

	IC48	IC49	IC64
Pin 1	5.0	5.0	11.2
2	4.8	4.2	9.1
3	0	0	0
4	0.2	4.6	
5	5.0	5.0	

	IC100	IC101	IC900	IC901	IC902
Pin 1	5.0	5.0	3.0	3.2	11.5
2	0	0.7	0	4.8	0
3	0	0	3.0	2.7	9.0
4	5.0	4.3	0	0	
5	5.0	5.0	2.0	2.6	
6			4.6	4.6	
7			3.2	2.9	
8			0	0	

MAIN BOARD (1/2)

	IC16	IC25	IC26	IC39	IC40	IC52	IC55	IC58
Pin 1	9.8	1.7	0	1.7	0	1.3	1.3	4.8
2	5.0	1.7	4.8	1.7	4.9	1.6	1.5	4.8
3	5.0	4.9	0	4.9	0	1.7	1.7	0
4	0.1	4.9	0	0	0.6	1.6	1.6	4.8
5	4.9	0	1.5	4.9	1.5	3.0	3.0	5.0
6	0	4.9	0	0	0	3.3	3.3	0
7	4.8	0	4.9	4.9	4.9	1.2	1.2	2.9
8	5.0	4.9	4.9	0	1	1.3	1.3	2.3
9	5.0	0	0	1.9	0	1.2	1.2	0
10	5.0	1.9	1.2	1.9	1.2	1.1	1.1	0
11	0	-	0	1.1	0	1.2	1.2	0
12	0	1.7	4.9	3.2	4.9	1.1	1.1	0
13	-9.6	2.2	4.5	4.0	4.6	1.1	1.1	0
14	-9.6	1.5	1.5	4.0	1.5	2.5	2.5	0
15	0	1.7	4.7	0.4	2.7	0	0	0
16	5.0	4.9	3.7	0.4	2.3	3.6	3.6	0
17	-9.6	4.9	3.7	4.9	2.3	2.9	2.9	0
18	-2.4	4.9	0	4.9	0	2.9	2.9	0
19	0	4.9	0	4.9	0	4.9	4.9	4.9
20	2.6	4.9	0	4.9	0	3.9	3.9	4.3
21		2.3	1.9	2.0	4.9	0	0	
22		2.0	1.9	1.4	4.9	3.7	3.7	
23		1.5	0	4.2	0	4.9	4.9	
24		1.6	0	0	0	5.0	5.0	
25		1.5	1.9	0	4.4	1.9	1.8	
26		2.8	1.9	4.9	0.2	1.3	1.2	
27		4.9	1.9	4.9	4.2	1.5	1.2	
28		1.6	1.9	0	4.3	1.7	1.8	
29		0	1.9	2.9	4.5			
30		2.4	1.9	0	7.4			
31		0	1.9	0	3.2			
32		4.9	1.9	4.9	2.3			
33		4.9	1.9	0	3.7			
34		4.9	1.9	4.9	1.0			
35		1.8	1.9	1.7	1.0			
36		1.8	1.9	1.7	1.0			
37		3.8	1.9	3.8	1.0			
38		3.8	1.9	3.8	1.0			
39		4.8	1.9	4.8	1.0			
40		2.5	1.9	2.5	1.3			
41		0	0	0	0			
42		4.8	0	4.8	0			
43		0	0	4.9	0			
44		0	1.9	0	4.9			
45		2.6	1.0	2.0	2.0			
46		4.8	0	4.9	0			
47		3.8	0	3.9	0			
48		3.8	1.9	3.9	4.9			

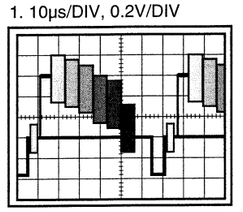
	B	C	E
Q2	2.6	4.8	0
Q3	(G) 2.8	(D) 5.0	(S) 3.0
Q5	3.4	11.5	2.8
Q6	3.9	11.5	3.4
Q7	3.7	11.5	3.2
Q8	3.2	11.5	2.6
Q9	3.3	5.0	2.6
Q10	3.0	7.0	2.4
Q11	(G) 7.0	(D) 11.5	(S) 6.9
Q12	6.9	11.5	6.2
Q13	3.9	11.4	3.2
Q14	2.9	5.0	2.3
Q15	2.9	6.3	2.3
Q17	5.4	11.4	4.8
Q20	5.5	11.4	4.9
Q21	3.9	11.5	3.4
Q22	3.4	11.5	2.8
Q23	3.7	11.5	3.2
Q24	3.2	11.5	2.6
Q25	2.6	5.0	3.3
Q26	2.4	7.0	3.0
Q27	(G) 7.0	(D) 11.5	(S) 6.7
Q28	6.7	11.5	6.1
Q29	3.9	11.4	3.3
Q30	2.9	5.0	2.3
Q31	2.9	5.9	2.3
Q32	(G) 5.9	(D) 11.4	(S) 5.6
Q33	5.4	11.4	4.8
Q36	4.8	11.4	5.4
Q37	5.0	0	5.0
Q38	2.9	4.9	2.4
Q39	2.9	4.9	2.3
Q40	3.0	4.9	2.3
Q41	2.9	4.9	2.4
Q42	3.0	4.9	2.4
Q43	3.0	4.9	2.4
Q44	3.0	4.9	2.4
Q45	3.0	4.9	2.4
Q46	3.0	4.9	2.3
Q47	3.0	4.9	2.3
Q48	3.0	4.9	2.3
Q49	3.0	4.9	2.4
Q100	2.3	4.6	1.7
Q101	0.7	0	1.4
Q102	3.0	4.6	2.3
Q103	3.0	6.3	2.3
Q104	5.7	11.1	6.3
Q105	3.7	11.0	3.1
Q106	2.4	4.9	1.7
Q107	2.5	0	3.1
Q108	3.0	4.9	2.3
Q109	3.0	6.5	2.3

	B	C	E
Q110	6.5	11.2	5.8
Q111	5.8	11.1	5.2
Q113	0.1	3.3	2.6
Q114	3.1	4.9	2.5
Q115	3.1	4.9	2.5
Q116	4.3	3.3	5.0
Q117	(G) 1.3	(D) 4.9	(S) 1.5
Q118	(G) 1.8	(D) 5.0	(S) 1.9
Q119	2.4	4.9	1.7
Q120	2.5	0	3.1
Q121	2.9	5.0	2.3
Q122	2.9	6.6	2.3
Q123	6.6	11.3	6.0
Q124	6.0	11.3	5.3
Q125	2.3	4.9	1.7
Q126	0.8	0	1.4
Q127	3.0	4.9	2.3
Q128	3.0	6.2	2.3
Q129	6.2	11.1	5.6
Q130	5.6	11.1	5.0
Q131	3.7	11.1	3.1
Q132	0.1	2.7	2.6
Q133	2.7	5.0	2.1
Q135	3.2	5.0	2.6
Q136	4.3	3.3	5.0
Q137	(G) 1.3	(D) 5.0	(S) 1.5
Q138	(G) 1.8	(D) 5.0	(S) 2.1
Q139	5.7	11.0	5.0
Q140	(G) 3.4	(D) 11.5	(S) 3.3
Q141	(G) 2.4	(D) 11.4	(S) 2.4
Q145	2.9	5.0	2.1
Q146	2.8	5.0	2.2
Q150	3.2	4.9	2.6
Q151	3.2	4.9	2.6

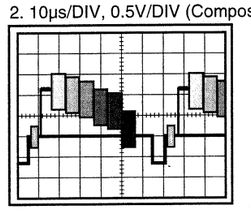
	B	C	E
Q508	5.1	6.0	4.4
Q511	5.7	11.0	5.0
Q513	5.6	11.1	5.0
Q550	6.3	11.4	5.6
Q924	2.8	5.0	2.2

MAIN BOARD (1/2)

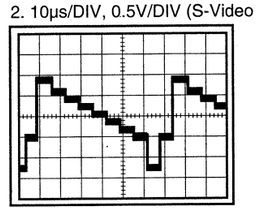
1. 10µs/DIV, 0.2V/DIV



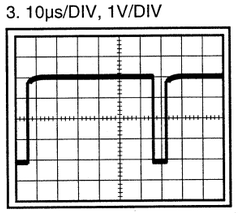
2. 10µs/DIV, 0.5V/DIV (Composite)



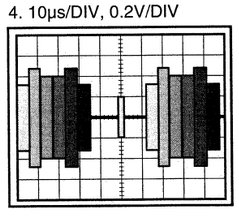
2. 10µs/DIV, 0.5V/DIV (S-Video Y)



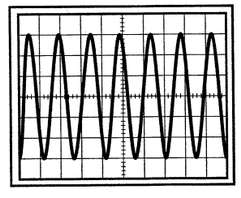
3. 10µs/DIV, 1V/DIV



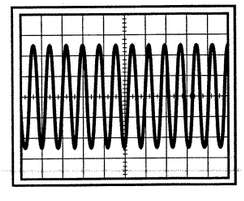
4. 10µs/DIV, 0.2V/DIV



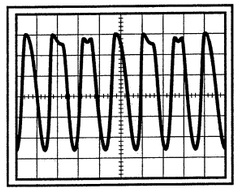
5. 20ns/DIV, 0.5V/DIV



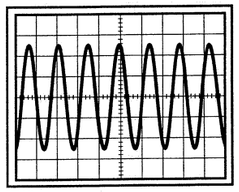
6. 20ns/DIV, 0.2V/DIV



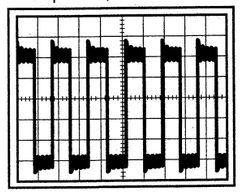
7. 20ns/DIV, 1V/DIV



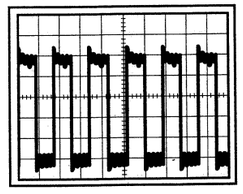
8. 20ns/DIV, 0.5V/DIV



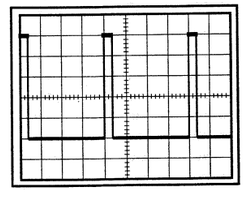
9. 0.1µs/DIV, 1V/DIV



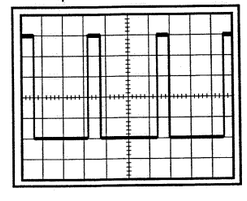
10. 50ns/DIV, 1V/DIV



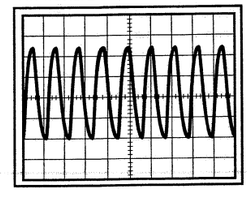
11. 5ms/DIV, 1V/DIV



12. 20µs/DIV, 1V/DIV

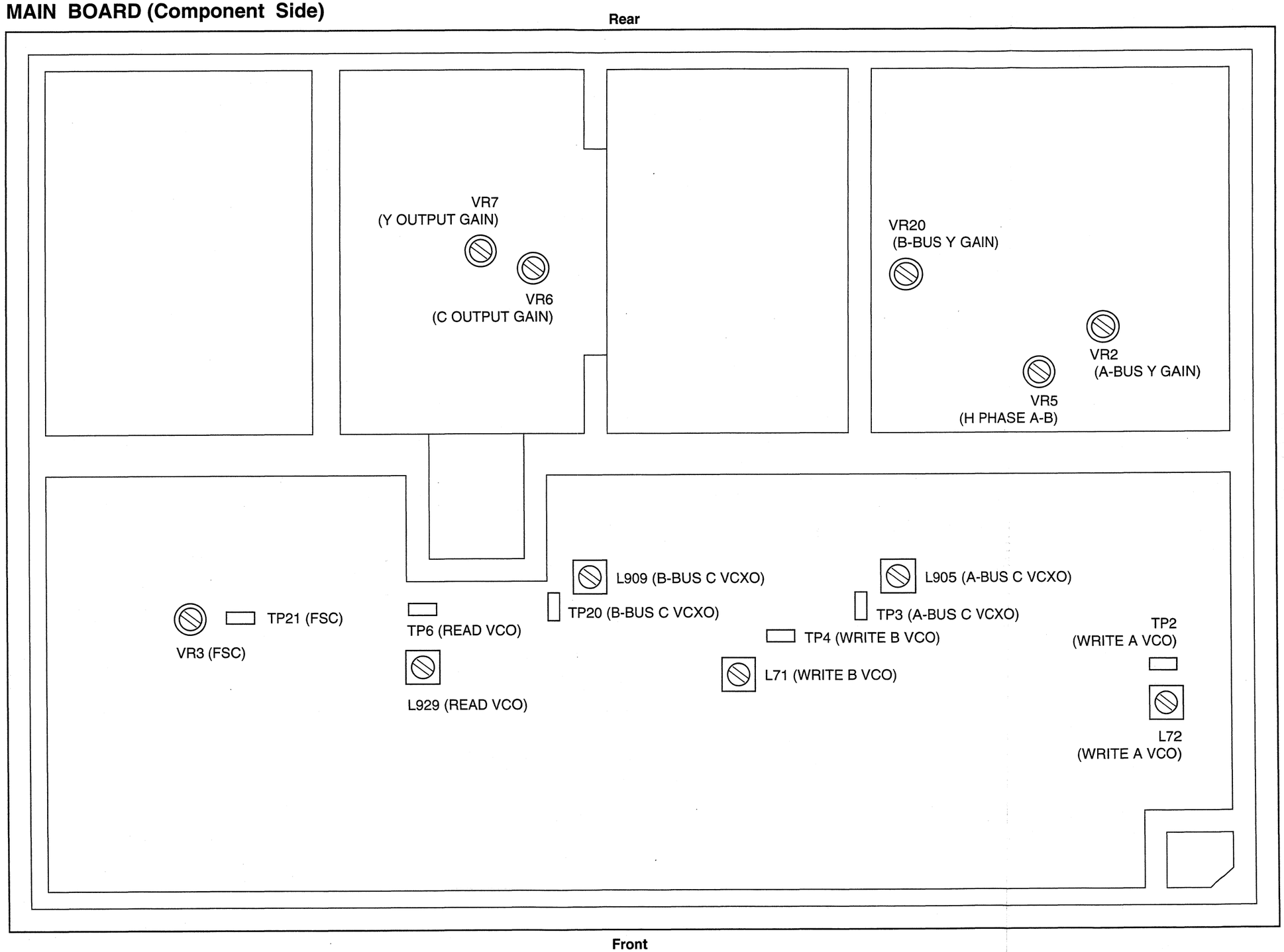


13. 50ns/DIV, 1V/DIV



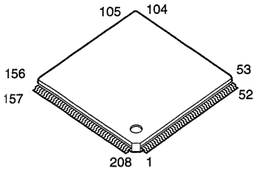
LOCATION OF TEST POINTS AND ADJUSTING CONTROLS

MAIN BOARD (Component Side)



APPEARANCE OF IC, TRANSISTOR AND DIODE

YWAJ0014



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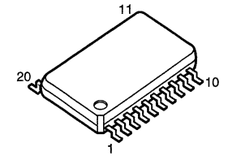
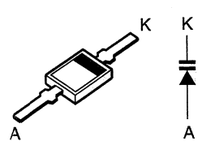


1SV153



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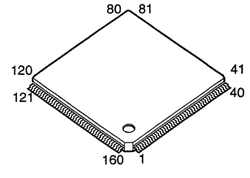

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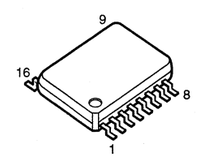

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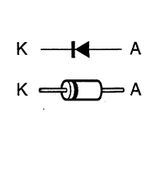

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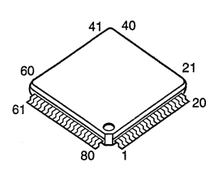

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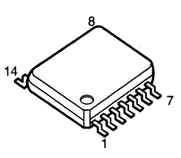

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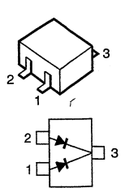

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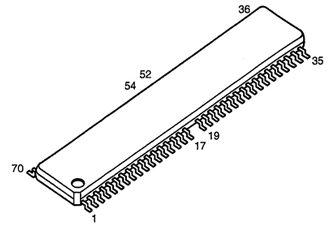

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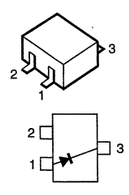

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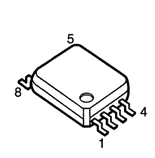

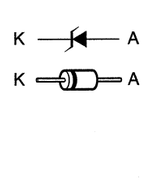

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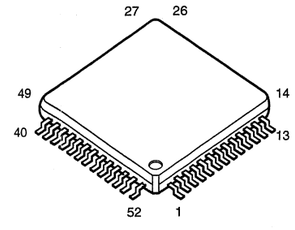

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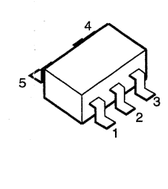

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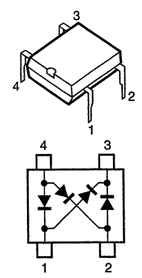

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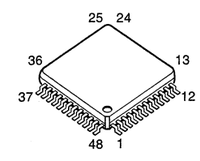

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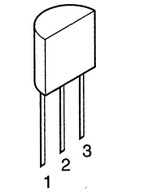

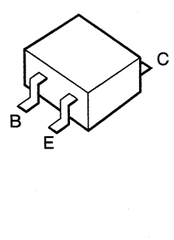

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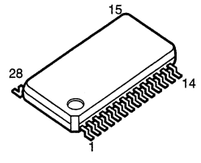

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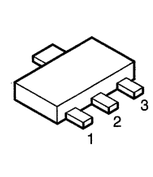

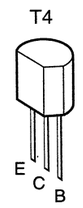

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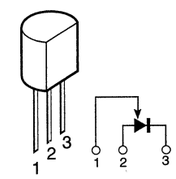

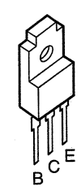

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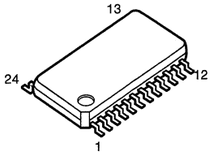

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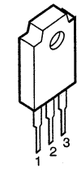
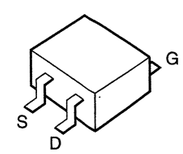


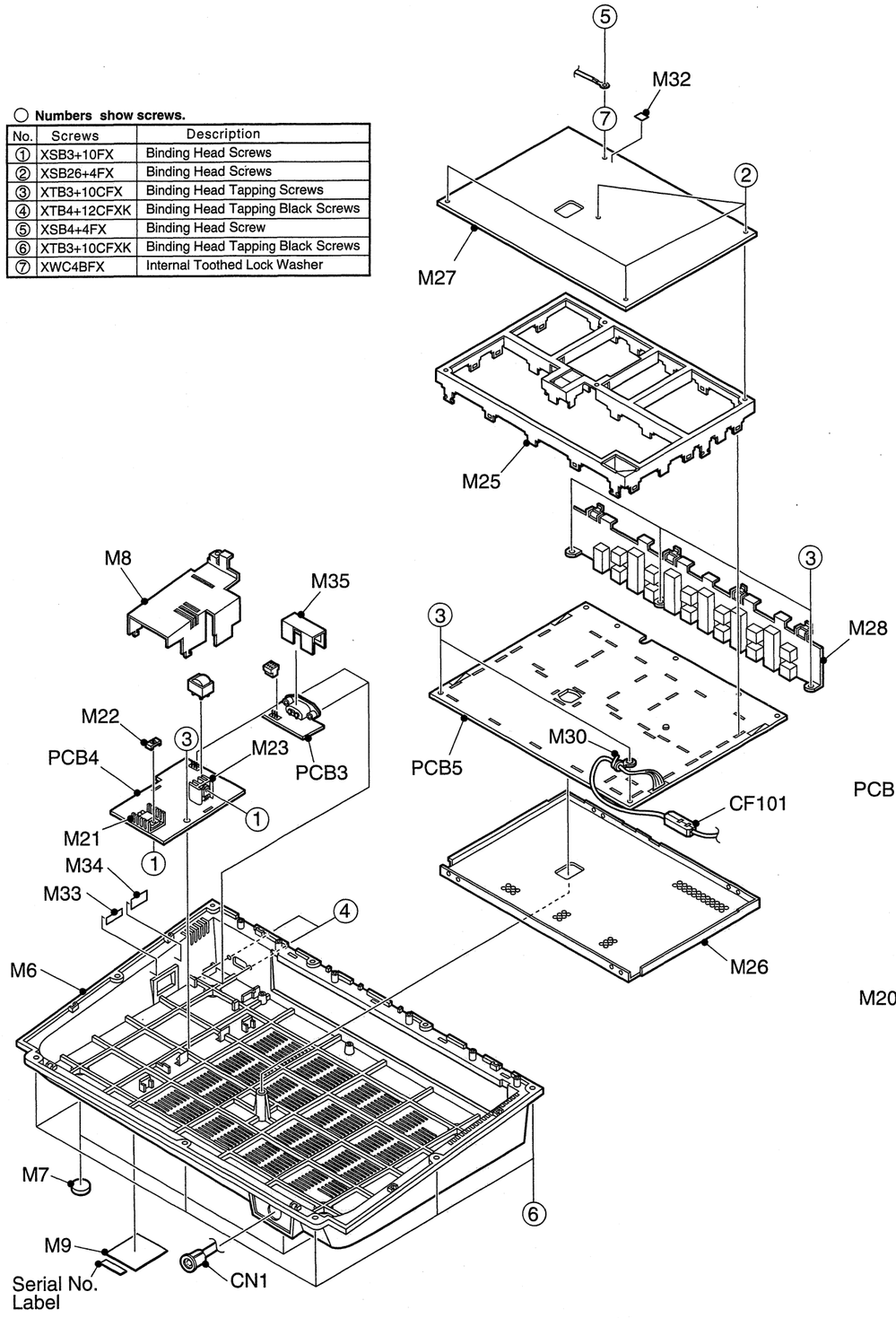
2SK662-PQR

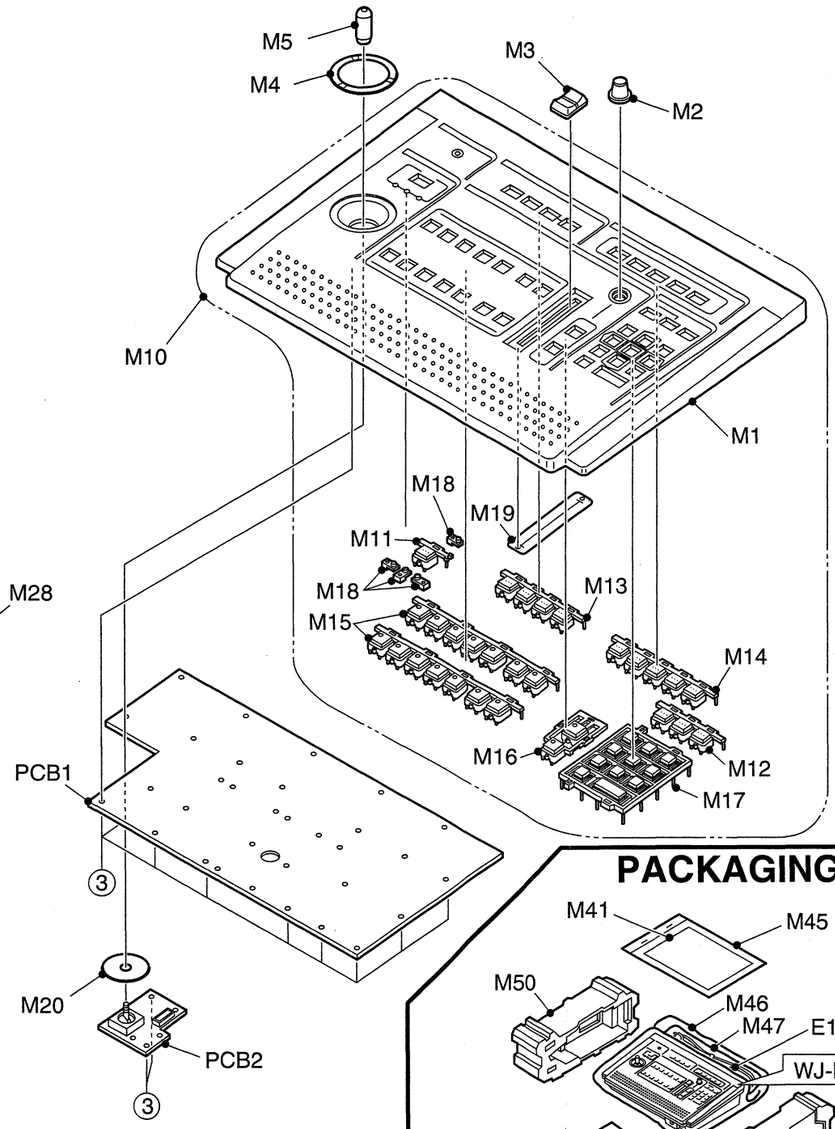


EXPLODED VIEW

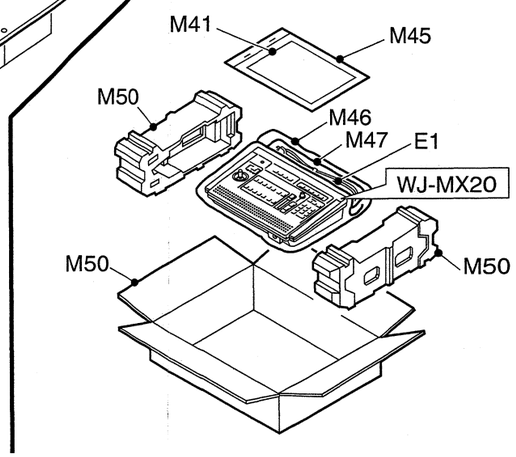
○ **Numbers show screws.**

No.	Screws	Description
①	XSB3+10FX	Binding Head Screws
②	XSB26+4FX	Binding Head Screws
③	XTB3+10CFX	Binding Head Tapping Screws
④	XTB4+12CFXK	Binding Head Tapping Black Screws
⑤	XSB4+4FX	Binding Head Screw
⑥	XTB3+10CFXK	Binding Head Tapping Black Screws
⑦	XWC4BFX	Internal Toothed Lock Washer





PACKAGING



REPLACEMENT PARTS LIST

nportant Notice

Components identified by " ⚠ " mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.
RTL : Retention Time Limited.

REF. NO.	PART NO.	DESCRIPTION
	MISCELLANEOUS	
'B1	YWAVE55A1	Flexible Wire Assy for Main Board CN3 and Power Board CN3
'B2	YWAVE55A2	Flexible Wire Assy for Main Board CN1 and Switch Board CN3
:N1	YWD0111N629	Connector for Titler Assy
:F101	YWSFC4	Ferrite Bead
:1 ⚠	XBA2C16ET0A	Current Fuse 1.6A 250V
:1 ⚠	YW610KS31A	AC Power Cord for WJ-MX20/B
M1	YWV5EB2017A1	Upper Cover
M2	YWV5RC0372A3	Knob
M3	YWV5RA1007A3	Knob
M4	YWV5WA1400A4	Panel
M5	YWV5RA0334A3	Knob
M6	YWV5EB2018A1	Bottom Cover
M7	YWV5LB0036A4	Rubber Foot
M8 ⚠	YWV2PA1014A2	Insulator
M9 ⚠	YW7C1A007A	Main Label
M10	YWV9AB2026AN	Upper Cover Assy
M11	YWV6JA1007A3	Button
M12	YWV6JA1008A3	Button
M13	YWV6JA1009A3	Button
M14	YWV6JA1010A2	Button
M15	YWV6JA1011A2	Button
M16	YWV6JA1012A3	Button
M17	YWV6JA1013A2	Button
M18	YWV1SA1001A3	Panel Light
M19	YWV3AA0140A4	Dust Proof Parts
M20 ⚠	YWV2VA0038A4	Barrier
M31 ⚠	YWCS1	Cord Clamp
M32 ⚠	YWA7SA0689A4	Earth Mark Label
M33 ⚠	YW7G1A213A	Fuse Label
M34 ⚠	YWV7MA0120A4	Safety Label
M35 ⚠	YW5H1A005A	Insulator

REF. NO.	PART NO.	DESCRIPTION	
	SWITCH BOARD		
PCB1 (RTL)	YWJMX20PKA2A	Printed Circuit Board Assy	
Q1-10	2SD1992A	Transistor	
D1-5	MA165	Diode	
D6-31	YWSLR305LCA	LED	
R1-8	ERDS2TJ103	Carbon	10K ohms 1/4W
R9-13	ERDS2TJ512	Carbon	5.1K ohms 1/4W
R14-18	ERDS2TJ104	Carbon	100K ohms 1/4W
R19-23	ERDS2TJ101	Carbon	100 ohms 1/4W
R24-28	ERDS2TJ103	Carbon	10K ohms 1/4W
R29	ERDS2TJ331	Carbon	330 ohms 1/4W
VR1	EWAQFEX05B15	Variable Resistor	100K ohms
VR2	EVJ02AF20A15	Variable Resistor	100K ohms
C1	YWUP05F104ZA	Ceramic	0.1 µF
C2	ECEA1CKS101	Electrolytic	100 µF 16V
L1	ELESE101KA	Coil	100 µF
SW1-38	EVQ23505R	Push Switch	
SW40,41	EVQ23505R	Push Switch	
CN1	YW521773010	30-pin Connector	
CN2	YWTKCA08PA1	8-pin Connector	
	POSITIONER BOARD		
PCB2 (RTL)	YWJAV55EKC1A	Printed Circuit Board Assy	
VR3	YWVL201104L	Variable Resistor	
CN3	YWTKCA08PP1	8-pin Connector	

REF. NO.	PART NO.	DESCRIPTION	
	INLET BOARD		
PCB3 (RTL)	YWJAV55EKB2A	Printed Circuit Board Assy	
CN1,2	YWTBGP05PC4	5-pin Connector	
CN3 ⚠	YWM1770C	Socket	
E1,2 ⚠	S-N5057	Fuse Holder	
E3 ⚠	YWTBGP05XB1	Insulator Cap for CN1,2 Connector	
	POWER BOARD		
PCB4 (RTL)	YWJMX20PKC2A	Printed Circuit Board Assy	
IC1	YWUPC24M12HF	IC	
IC2	YWTA76431S	IC	
Q1	2SC3866	Transistor	
Q2,3	2SC3377	Transistor	
Q4,5	2SC1740	Transistor	
Q6,7 ⚠	YWPC123FY2	Photocoupler	
D1	S1WBA60	Diode	
D2	YWERA34-10	Diode	
D3	YWERA1502	Diode	
D4	YWERA9102	Diode	
D6	YWERA84009	Diode	
D7	ERC81-004	Diode	
D9	YWRD18JB2	Diode	
D10	YWERA9102	Diode	
VS1 ⚠	ERZC07DK471U	ZNR	
R1 ⚠	ERC12ZGM105	Solid Resistor	1M ohms 1/2W
R2	ERF5TJ130	Wire Wound	13 ohms 5W
R3	ERD25FJ224	Carbon	220K ohms 1/4W
R4	ERDS1TJ224	Carbon	220K ohms 1/4W
R6	ERDS2TJ333	Carbon	33K ohms 1/4W
R7	ERG1SJ271U	Metal	270 ohms 1W
R8,9	ERDS2TJ101	Carbon	100 ohms 1/4W
R10	ERX1SJ1R5P	Metal	1.5 ohms 1W
R11	ERDS2TJ222	Carbon	2.2K ohms 1/4W
R12	ERDS2TJ102	Carbon	1K ohms 1/4W
R13	ERDS2TJ334	Carbon	330K ohms 1/4W
R14	ERDS2TJ561	Carbon	560 ohms 1/4W
R15-17	ERDS2TJ102	Carbon	1K ohms 1/4W
R18	ERDS2TJ470	Carbon	47 ohms 1/4W
R19	ERDS2TJ102	Carbon	1K ohms 1/4W
R20	ER0S2CKF8201	Metal	8.2K ohms 1/4W
R21	ER0S2CKF7501	Metal	7.5K ohms 1/4W
R22	ERC12ZGM156	Solid Resistor	15M ohms 1/2W
R23	ERDS2TJ391	Carbon	390 ohms 1/4W

REF. NO.	PART NO.	DESCRIPTION	
R24	ERDS2TJ102	Carbon	1K ohms 1/4W
R25	ERDS2TJ470	Carbon	47 ohms 1/4W
R26	ERDS2TJ102	Carbon	1K ohms 1/4W
R27,28	ERDS2TJ104	Carbon	100K ohms 1/4W
C1 ⚠	ECQU2A104MV	Plastic	0.1 µF 250V
C3-5 ⚠	ECKDRS332ME	Ceramic	3300 pF
C6,7	ECKDRS222ME	Ceramic	2200 pF
C8 ⚠	ECOS2GA680CB	Electrolytic	68 µF 400V
C9 ⚠	ECQE6103KZ	Plastic	0.01 µF 630V
C10	ECKD3A101KBN	Ceramic	100 pF 1KV
C11	ECEA1HKG100B	Electrolytic	1 µF 50V
C12	ECQM1H104JZ	Plastic	0.1 µF 50V
C13	ECQB1H473JZ	Plastic	0.047 µF 50V
C14,15	ECEA1HKG2R2	Electrolytic	2.2 µF 50V
C16	ECQM1H104JZ	Plastic	0.1 µF 50V
C17	ECEA1HKG100B	Electrolytic	1 µF 50V
C18	ECA1EFQ221	Electrolytic	220 µF 25V
C19	ECQM1H104JZ	Plastic	0.1 µF 50V
C20,21	EEUFA1A122S	Electrolytic	1200 µF 10V
C22	ECA1AFQ181	Electrolytic	180 µF 10V
C23	ECA1EFQ221	Electrolytic	220 µF 25V
L1	ELF18D221F	Coil220 µH	
L2	YWPC7560K	Coil56 µH	
L3	YWPC7120K	Coil12 µH	
L4,5	YWPC7560K	Coil56 µH	
T1 ⚠	ETS27BA167AC	Power Transformer	
SW1 ⚠	YWSJP4A01BBM	Seesaw Switch	
CN1,2	YWTBGP05PC4	5-pin Connector	
CN3	YW520300810	8-pin Connector	
E1-5 ⚠	YW851040	Insulator Cover for Capacitor	
M21	YWSP211K	Heat Sink for IC	
M22	YWM1761	Stopper Plate for TR	
M23	YWDBA25BSAN0	Heat Sink for TR	
M24 ⚠	YWV2PA1027A4	Insulator Sheet for Coil	

MAIN BOARD

REF. NO.	PART NO.	DESCRIPTION
PCB5 (RTL)	YWJMX20PKZ1A	Printed Circuit Board Assy
IC1	MC74HC541AF	IC
IC4	YWUPD784038B	IC
IC5	YWMC74HC175F	IC
IC6,7	MC74HC374AF	IC
IC11	YW78L05UATE2	IC
IC12	YWSC7S08FER	IC
IC13	YWNJM2267VT1	IC
IC14	YWNJM2268VT1	IC
IC15	YWM62352GP	IC
IC18,19	YWSC7SU04FER	IC
IC20,21	MC74HC4052F	IC
IC23	MC74HC4066F	IC
IC25	MN65752H	IC
IC26	YWM141625BFU	IC
IC28	YWUPD485505G25	IC
IC29	YWAJ0034	Custom IC
IC30	YWM5M4V416	IC
IC31	YWM5237MLT1B	IC
IC33	YWSC7SU04FER	IC
IC34,35	MC74HC4052F	IC
IC37	MC74HC4066F	IC
IC39	MN65752H	IC
IC40	YWM141625BFU	IC
IC42	YWUPD485505G25	IC
IC43	YWAJ0034	Custom IC
IC44	YWSC7SU04FER	IC
IC46	YWM5M4V416	IC
IC47	YWSC7S08FER	IC
IC48	YWSC7S00FER	IC
IC49,50	YWSC7S08F	IC
IC51	YWM5237MLT1B	IC
IC52	YWMB40968PF	IC
IC55	YWMB40968PF	IC
IC56	YWSC7SU04FER	IC
IC58	YWBU6144FV	IC
IC59	YWUPD485505G25	IC
IC62	YWAJ0016	Custom IC
IC64	YW78L09UATE2	IC
IC65	YWSN75179BPS	IC
IC70	YWM51951AMLW	IC
IC100,101	YWSC7SU04FER	IC
IC500-503	YWM51132FP	IC
IC504,505	NJM3404AM	IC
IC511,512	YWLM1881M	IC
IC513	YW74ABT244DB	IC
IC900,901	YWNJM2246M	IC
IC902	YW78L09UATE2	IC
Q1	2SB1219-QRS	Transistor
Q2	2SC4081	Transistor
Q3	2SK662-PQR	FET
Q5-15	2SC4081	Transistor
Q17,20	2SC4081	Transistor
Q21-33	2SC4081	Transistor
Q36	2SC4081	Transistor
Q37	2SA1576	Transistor
Q38-49	2SD601-QR	Transistor
Q100	2SC4081	Transistor
Q101	2SA1576	Transistor
Q102-105	2SC4081	Transistor
Q106	2SD601-QR	Transistor
Q107	2SA1576	Transistor
Q108-111	2SC4081	Transistor
Q113	2SD1979	Transistor
Q114,115	2SC4081	Transistor
Q116	2SA1576	Transistor
Q117,118	2SK662-PQR	FET
Q119	2SD601-QR	Transistor
Q120	2SA1576	Transistor
Q121-125	2SC4081	Transistor
Q126	2SA1576	Transistor
Q127-131	2SC4081	Transistor
Q132	2SD1979	Transistor
Q133,135	2SC4081	Transistor
Q136	2SA1576	Transistor
Q137,138	2SK662-PQR	FET
Q139-141	2SC4081	Transistor
Q145,146	2SC4713	Transistor
Q150,151	2SC4081	Transistor
Q508	2SD601-QR	Transistor
Q511,513	2SC4081	Transistor
Q550	2SC4081	Transistor
Q924	2SC4713	Transistor
D1-3	YWRB421D	Diode
D4	MA741	Diode
D7,8	1SV153	Diode
D12	MA141K	Diode
D13	1SV153	Diode
D14	YWKV1471	Diode
D15	1SV153	Diode
D16,930	YWKV1471	Diode
D931	MA143	Diode

REF. NO.	PART NO.	DESCRIPTION	
R1	ERJ3GEYJ392	Carbon	3.9K ohms 1/16W
R2-22	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R26	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R28	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R29	ERJ3GEYJ202	Carbon	2K ohms 1/16W
R30	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R31	ERJ3GEYJ511	Carbon	510 ohms 1/16W
R32	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R33,34	ERJ3GEYJ511	Carbon	510 ohms 1/16W
R35-37	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R38	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R39-41	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R42	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R43	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R44	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R45	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R46,47	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R52	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R54	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R57	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R58	YWR0816P102D	Metal	1K ohms 1/16W
R59,60	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R63	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R64	YWR0816P102D	Metal	1K ohms 1/16W
R65	YWR0816P202D	Metal	2K ohms 1/16W
R66	YWR0816P102D	Metal	1K ohms 1/16W
R67	YWR0816P751D	Metal	750 ohms 1/16W
R68	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R69	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R70	YWR0816P222D	Metal	2.2K ohms 1/16W
R73	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R74	YWR0816P102D	Metal	1K ohms 1/16W
R75	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R76	YWR0816P912D	Metal	9.1K ohms 1/16W
R77	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R78	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R79	YWR0816P102D	Metal	1K ohms 1/16W
R80	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R81	ERJ3GEYJ242	Carbon	2.4K ohms 1/16W
R82	ERJ3GEYJ681	Carbon	680 ohms 1/16W
R83	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R84	YWR0816P222D	Metal	2.2K ohms 1/16W
R85	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R87	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R88	YWR0816P122D	Metal	1.2K ohms 1/16W
R89	YWR0816P622D	Metal	6.2K ohms 1/16W
R92,93	YWR0816P242D	Metal	2.4 ohms 1/16W
R94,95	YWR0816P332D	Metal	3.3K ohms 1/16W
R101	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R102,103	ERJ3GEYJ104	Carbon	100K ohms 1/16W

REF. NO.	PART NO.	DESCRIPTION	
R106	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R107	YWR0816P102D	Metal	1K ohms 1/16W
R108,109	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R112	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R113,114	YWR0816P102D	Metal	1K ohms 1/16W
R115	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R116	YWR0816P821D	Metal	820 ohms 1/16W
R117	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R118	YWR0816P202D	Metal	2K ohms 1/16W
R119	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R120,123	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R124	YWR0816P912D	Metal	9.1K ohms 1/16W
R125	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R126	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R127	YWR0816P102D	Metal	1K ohms 1/16W
R128	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R129	YWR0816P751D	Metal	750 ohms 1/16W
R131	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R132	YWR0816P222D	Metal	2.2K ohms 1/16W
R133	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R135	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R136	YWR0816P102D	Metal	1K ohms 1/16W
R139	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R140	YWR0816P222D	Metal	2.2K ohms 1/16W
R141	YWR0816P512D	Metal	5.1K ohms 1/16W
R142,143	YWR0816P332D	Metal	3.3K ohms 1/16W
R150	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R152	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R153	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R154	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R155	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R156-160	YWR0816P750D	Metal	75 ohms 1/16W
R161	ERJ3GEYJ393	Carbon	39K ohms 1/16W
R162	ERJ3GEYJ753	Carbon	75K ohms 1/16W
R163	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R164	YWR0816P750D	Metal	75 ohms 1/16W
R165	ERJ3GEYJ393	Carbon	39K ohms 1/16W
R166	ERJ3GEYJ753	Carbon	75K ohms 1/16W
R167	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R168	YWR0816P750D	Metal	75 ohms 1/16W
R169	ERJ3GEYJ393	Carbon	39K ohms 1/16W
R170	ERJ3GEYJ753	Carbon	75K ohms 1/16W
R171	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R172	YWR0816P750D	Metal	75 ohms 1/16W
R173	ERJ3GEYJ393	Carbon	39K ohms 1/16W
R174	ERJ3GEYJ753	Carbon	75K ohms 1/16W
R175	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R176	YWR0816P750D	Metal	75 ohms 1/16W
R177	ERJ3GEYJ393	Carbon	39K ohms 1/16W
R178	ERJ3GEYJ753	Carbon	75K ohms 1/16W

REF. NO.	PART NO.	DESCRIPTION	
R179	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R180	YWR0816P750D	Metal	75 ohms 1/16W
R181	ERJ3GEYJ393	Carbon	39K ohms 1/16W
R182	ERJ3GEYJ753	Carbon	75K ohms 1/16W
R183	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R184	YWR0816P750D	Metal	75 ohms 1/16W
R185	ERJ3GEYJ393	Carbon	39K ohms 1/16W
R186	ERJ3GEYJ753	Carbon	75K ohms 1/16W
R187	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R188	YWR0816P750D	Metal	75 ohms 1/16W
R189	ERJ3GEYJ393	Carbon	39K ohms 1/16W
R190	ERJ3GEYJ753	Carbon	75K ohms 1/16W
R191	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R192	YWR0816P750D	Metal	75 ohms 1/16W
R193	ERJ3GEYJ393	Carbon	39K ohms 1/16W
R194	ERJ3GEYJ753	Carbon	75K ohms 1/16W
R195	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R196	YWR0816P750D	Metal	75 ohms 1/16W
R197	ERJ3GEYJ393	Carbon	39K ohms 1/16W
R198	ERJ3GEYJ753	Carbon	75K ohms 1/16W
R199	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R200	YWR0816P750D	Metal	75 ohms 1/16W
R201	ERJ3GEYJ393	Carbon	39K ohms 1/16W
R202	ERJ3GEYJ753	Carbon	75K ohms 1/16W
R203	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R204	YWR0816P750D	Metal	75 ohms 1/16W
R205	ERJ3GEYJ393	Carbon	39K ohms 1/16W
R206	ERJ3GEYJ753	Carbon	75K ohms 1/16W
R207,208	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R209	ERJ3GEYJ202	Carbon	2K ohms 1/16W
R210	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R211	ERJ3GEYJ202	Carbon	2K ohms 1/16W
R212	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R213,214	ERJ3GEYJ202	Carbon	2K ohms 1/16W
R215	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R218	YWR0816P102D	Metal	1K ohms 1/16W
R224	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R227,228	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R232	ERJ3GEYJ681	Carbon	680 ohms 1/16W
R233,234	ERJ3GEYJ330	Carbon	33 ohms 1/16W
R235,236	ERJ3GEYJ241	Carbon	240 ohms 1/16W
R238	ERJ3GEYJ681	Carbon	680 ohms 1/16W
R240,241	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R250,251	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R252	YWR0816P202D	Metal	2K ohms 1/16W
R253	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R254	YWR0816P202D	Metal	2K ohms 1/16W
R255	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R261	ERJ3GEYJ432	Carbon	4.3K ohms 1/16W
R262	ERJ3GEY0R00	Carbon	0 ohm 1/16W

REF. NO.	PART NO.	DESCRIPTION	
R271	YWR0816P222D	Metal	2.2K ohms 1/16W
R272	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R274	YWR0816P222D	Metal	2.2K ohms 1/16W
R275	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R277-279	YWR0816P561D	Metal	560 ohms 1/16W
R280	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R300	ERJ8GCSJ100	Carbon	10 ohms 1/8W
R303	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R304,305	YWR0816P102D	Metal	1K ohms 1/16W
R306	ERJ3GEYJ202	Carbon	2K ohms 1/16W
R307	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R308	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R309	YWR0816P912D	Metal	9.1K ohms 1/16W
R310	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R311	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R312	ERJ3GEYJ271	Carbon	270 ohms 1/16W
R314	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R315	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R316	ERJ8GEYJ220	Carbon	22 ohmS 1/8W
R317	YWR0816P222D	Metal	2.2K ohms 1/16W
R319,320	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R321	YWR0816P102D	Metal	1K ohms 1/16W
R322	YWR0816P202D	Metal	2K ohms 1/16W
R323	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R324	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R325	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R326	YWR0816P391D	Metal	390 ohms 1/16W
R327	YWR0816P202D	Metal	2K ohms 1/16W
R328	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R329	ERJ8GEYJ200	Carbon	20 ohms 1/8W
R330,331	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R332	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R333	ERJ3GEYJ474	Carbon	470K ohms 1/16W
R338	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R340	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R341	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W
R342	ERJ3GEYJ511	Carbon	510 ohms 1/16W
R343,345	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R346	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R347	ERJ3GEYJ754	Carbon	750K ohms 1/16W
R348	ERJ3GEYJ753	Carbon	75K ohms 1/16W
R349	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R350	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R351	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R352	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R353	YWR0816P181D	Metal	180 ohms 1/16W
R354	YWR0816P682D	Metal	6.8K ohms 1/16W
R355	YWR0816P432D	Metal	4.3K ohms 1/16W
R356	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R357	ERJ3GEYJ562	Carbon	5.6K ohms 1/16W

REF. NO.	PART NO.	DESCRIPTION	
R358	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R359	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R360	ERJ3GEYJ510	Carbon	51 ohms 1/16W
R361	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R362	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R363	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R366	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R367,368	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R370,372	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R376,377	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R378-385	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R386	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R387	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R388	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R390	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R391	ERJ3GEYJ752	Carbon	7.5K ohms 1/16W
R392	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R394	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R395	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R396	YWR0816P392D	Metal	3.9K ohms 1/16W
R400	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R401	ERJ8GCSJ100	Carbon	10 ohms 1/8W
R402	YWR0816P102D	Metal	1K ohms 1/16W
R403	YWR0816P202D	Metal	2K ohms 1/16W
R406	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R407	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R408	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R409	YWR0816P391D	Metal	390 ohms 1/16W
R410	YWR0816P202D	Metal	2K ohms 1/16W
R411	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R412	ERJ8GEYJ200	Carbon	20 ohms 1/8W
R413	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R414	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R415	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R416,417	YWR0816P102D	Metal	1K ohms 1/16W
R418	ERJ3GEYJ202	Carbon	2K ohms 1/16W
R419	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R420	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R421	YWR0816P912D	Metal	9.1K ohms 1/16W
R422	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R423	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R424	ERJ3GEYJ271	Carbon	270 ohms 1/16W
R426	ERJ8GEYJ220	Carbon	22 ohms 1/8W
R427	YWR0816P202D	Metal	2K ohms 1/16W
R428	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R429	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R432	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R433	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W
R434	ERJ3GEYJ511	Carbon	510 ohms 1/16W
R435	ERJ3GEYJ103	Carbon	10K ohms 1/16W

REF. NO.	PART NO.	DESCRIPTION	
R436,439	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R440	ERJ3GEYJ754	Carbon	750K ohms 1/16W
R441	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R442	ERJ3GEYJ474	Carbon	470K ohms 1/16W
R447	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R448	YWR0816P181D	Metal	180 ohms 1/16W
R449	YWR0816P682D	Metal	6.8K ohms 1/16W
R450	YWR0816P432D	Metal	4.3K ohms 1/16W
R451	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R452,453	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R454	ERJ3GEYJ562	Carbon	5.6K ohms 1/16W
R455	ERJ3GEYJ510	Carbon	51 ohms 1/16W
R456	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R457	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R458	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R460	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R461	ERJ3GEYJ752	Carbon	7.5K ohms 1/16W
R462	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R463	ERJ3GEYJ753	Carbon	75K ohms 1/16W
R464	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R465	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R466	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R467	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R468-476	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R477,478	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R482-484	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R486-488	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R491	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R492	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R493	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R495	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R496	YWR0816P392D	Metal	3.9K ohms 1/16W
R530,531	YWR0816P162D	Metal	1.6K ohms 1/16W
R540,541	YWR0816P102D	Metal	1K ohms 1/16W
R542,543	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R544,545	YWR0816P102D	Metal	1K ohms 1/16W
R546,547	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R548,549	YWR0816P102D	Metal	1K ohms 1/16W
R550,551	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R552,553	YWR0816P102D	Metal	1K ohms 1/16W
R554	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R555	YWR0816R333D	Metal	33K ohms 1/16W
R556	YWR0816P223D	Metal	22K ohms 1/16W
R557	YWR0816P153D	Metal	15K ohms 1/16W
R558	YWR0816R333D	Metal	33K ohms 1/16W
R559	YWR0816P223D	Metal	22K ohms 1/16W
R560	YWR0816P153D	Metal	15K ohms 1/16W
R561-565	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R566	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R567	ERJ3GEYJ562	Carbon	5.6K ohms 1/16W

REF. NO.	PART NO.	DESCRIPTION	
R568	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R570	YWR0816R200D	Metal	20 ohms 1/16W
R571	YWR0816P560D	Metal	56 ohms 1/16W
R600	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R601	ERJ3GEYJ182	Carbon	1.8K ohms 1/16W
R602	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R603	ERJ3GEYJ182	Carbon	1.8K ohms 1/16W
R604	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R609,610	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R612,620	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R621-624	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R630-633	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R640	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R641	ERJ3GEYJ183	Carbon	18K ohms 1/16W
R642	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R643	ERJ3GEYJ183	Carbon	18K ohms 1/16W
R700	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R701-708	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R720-735	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R741,742	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R743,744	ERJ3GEYJ684	Carbon	680K ohms 1/16W
R745,746	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R747	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R751,752	ERJ6GEY0R00	Carbon	0 ohm 1/10W
R753	ERJ3GEYJ561	Carbon	560 ohms 1/16W
R754	ERJ3GEYJ334	Carbon	330K ohms 1/16W
R755	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R782,783	ERDS2TJ102	Carbon	1K ohms 1/4W
R784	ERJ8GEYJ220	Carbon	22 ohms 1/8W
R785	ERJ8GEYJ100	Carbon	10 ohms 1/8W
R786-788	ERJ8GEYJ220	Carbon	22 ohms 1/8W
R789	ERJ8GEYJ100	Carbon	10 ohms 1/8W
R790,791	ERJ8GEYJ220	Carbon	22 ohms 1/8W
R794	YWR0816P102D	Metal	1K ohms 1/16
R795,796	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R800-809	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R810	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R811-813	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R816-823	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R830-843	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R846-853	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R862,878	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R879,890	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R894-898	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R900	YWR0816P681D	Metal	680 ohms 1/16
R901	YWR0816P751D	Metal	750 ohms 1/16
R902	YWR0816P681D	Metal	680 ohms 1/16
R903	YWR0816P751D	Metal	750 ohms 1/16
R905	ERJ8GEY0R00	Carbon	0 ohm 1/8W
R923	ERJ3GEYJ471	Carbon	470 ohms 1/16W

REF. NO.	PART NO.	DESCRIPTION	
R926	ERJ3GEYJ183	Carbon	18K ohms 1/16W
R927	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R932	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R950-953	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R961,962	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R964,965	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R967,968	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R980,981	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R990	ERJ3GEY101	Carbon	100 ohms 1/16W
R993	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R994	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R995,996	ERJ3GEYJ561	Carbon	560 ohms 1/16W
R999	ERJ3GEYJ101	Carbon	100 ohms 1/16W
VR2	EVM1DSW30BE2	Variable Resistor	220 ohms
VR3	EVM1DSW30BE4	Variable Resistor	22K ohms
VR5	EVM1DSW30B14	Variable Resistor	10K ohms
VR6,7	EVM1DSW30BY2	Variable Resistor	330 ohms
VR20	EVM1DSW30BE2	Variable Resistor	220 ohms
C1	YWT316B104MT	Ceramic	0.1 µF
C2	YWRVS1C470M	Electrolytic	47 µF 16V
C3	YWRVS1C220M	Electrolytic	22 µF 16V
C4,5	ECEV1CG331	Electrolytic	330 µF 16V
C7	EECF5R5U105	Electrolytic	1 µF 5.5V
C8	SK31A106KRB	Tantalum	10 µF 10V
C9,10	YW5CH101J5VT	Ceramic	100 pF
C11	SK31A106KRB	Tantalum	10 µF 10V
C12,13	YWT316B104MT	Ceramic	0.1 µF
C15,16	YW5CH050C5VT	Ceramic	5 pF
C17	SK31A106KRB	Tantalum	10 µF10V
C18,19	YWT316B104MT	Ceramic	0.1 µF
C20	YWRVS1C470M	Electrolytic	47 µF 16V
C21,22	YWT316B104MT	Ceramic	0.1 µF
C23	YWRVS1C470M	Electrolytic	47 µF 16V
C29	YWT316B104MT	Ceramic	0.1 µF
C30	SK21A476KRD	Tantalum	47 µF 10V
C31,32	YWRVS1C470M	Electrolytic	47 µF 16V
C33	YW5CH220J5VB	Ceramic	22 pF
C34-36	YW5CH330J5VB	Ceramic	33 pF
C37	YW5F104Z2VB	Ceramic	0.1 µF
C38	YWRVS1C470M	Electrolytic	47 µF 16V
C39,40	YWT316B104MT	Ceramic	0.1 µF
C41	YWRVS1C470M	Electrolytic	47 µF 16V
C42-44	YW5CH101J5VB	Ceramic	100 pF
C45	SK21A476KRD	Tantalum	47 µF 10V
C46,48	YWT316B104MT	Ceramic	0.1 µF
C49	YWRVS1C470M	Electrolytic	47 µF 16V
C50	YW5CH220J5VB	Ceramic	22 pF
C51,52	YW5CH221J5VT	Ceramic	220 pF
C53	YWT316B104MT	Ceramic	0.1 µF
C54	SK31A106KRB	Tantalum	10 µF 10V

REF. NO.	PART NO.	DESCRIPTION	
C55	YWRVS1H1R0M	Electrolytic	1 µF 50V
C56	YW5F683Z2VB	Ceramic	0.068 µF
C59	SK31A106KRB	Tantalum	10 µF 10V
C60	YWT316B104MT	Ceramic	0.1 µF
C66	YWRVS1H1R0M	Electrolytic	1 µF 50V
C67	YWT316B104MT	Ceramic	0.1 µF
C68	SK21A476KRD	Tantalum	47 µF 10V
C69,70	YWT316B104MT	Ceramic	0.1 µF
C71	YWRVS0J470M	Electrolytic	47 µF 6.3V
C72	YWT316B104MT	Ceramic	0.1 µF
C75	YW5F104Z2VB	Ceramic	0.1 µF
C76	YWRVS1C470M	Electrolytic	47 µF 16V
C77	YWRVS1C100M	Electrolytic	10 µF 16V
C79	YW5F104Z2VB	Ceramic	0.1 µF
C80	YWRVS1C220M	Electrolytic	22 µF 16V
C81	YWT316B104MT	Ceramic	0.1 µF
C82	YW5CH160J5V	Ceramic	16 PF
C83-85	YWRVS1C470M	Electrolytic	47 µF 16V
C89	YW5CH390J5VB	Ceramic	39 pF
C93,94	YWRVS1C220M	Electrolytic	22 µF 16V
C95	YWT316B104MT	Ceramic	0.1 µF
C96	SK21A476KRD	Tantalum	47 µF 10V
C97,98	YWT316B104MT	Ceramic	0.1 µF
C99	YWRVS0J470M	Electrolytic	47 µF 6.3V
C100	YWT316B104MT	Ceramic	0.1 µF
C101	YWRVS1C470M	Electrolytic	47 µF 16V
C104	YW5F104Z2VB	Ceramic	0.1 µF
C105	YWRVS1C470M	Electrolytic	47 µF 16V
C106	YWRVS1C100M	Electrolytic	10 µF 16V
C108	YWRVS1C470M	Electrolytic	47 µF 16V
C109	YWRVS1C220M	Electrolytic	22 µF 16V
C110	YWT316B104MT	Ceramic	0.1 µF
C112,113	YWRVS1C470M	Electrolytic	47 µF 16V
C116	YW5F104Z2VB	Ceramic	0.1 µF
C117	YW5CH390J5VB	Ceramic	39 pF
C118-121	YWRVS1C220M	Electrolytic	22 µF 16V
C122-126	YWT316B104MT	Ceramic	0.1 µF
C128	YW5CH101J5VB	Ceramic	100 pF
C129,130	YWT316B104MT	Ceramic	0.1 µF
C131	SK31A106KRB	Tantalum	10 µF 10V
C136-138	ECEV0JG331	Electrolytic	330 µF 6.3V
C139	YW5X103K2VB	Ceramic	0.01 µF
C140	YW5F104Z2VB	Ceramic	0.1 µF
C141	EEVHB0G101R	Electrolytic	100 µF 4V
C142	YWT316B104MT	Ceramic	0.1 µF
C143	EEVHB0G101R	Electrolytic	100 µF 4V
C144	YW5F104Z2VB	Ceramic	0.1 µF
C145	EEVHB0G101R	Electrolytic	100 µF 4V
C146	YWT316B104MT	Ceramic	0.1 µF
C147	EEVHB0G101R	Electrolytic	100 µF 4V

REF. NO.	PART NO.	DESCRIPTION	
C148	YW5F104Z2VB	Ceramic	0.1 µF
C149	EEVHB0G101R	Electrolytic	100 µF 4V
C150	YWT316B104MT	Ceramic	0.1 µF
C151	EEVHB0G101R	Electrolytic	100 µF 4V
C152	YW5F104Z2VB	Ceramic	0.1 µF
C153	EEVHB0G101R	Electrolytic	100 µF 4V
C154	YWT316B104MT	Ceramic	0.1 µF
C155	EEVHB0G101R	Electrolytic	100 µF 4V
C159,161	YWT316B104MT	Ceramic	0.1 µF
C162	YWSK1A336MRD	Tantalum	33 µF 10V
C163	YWT316B104MT	Ceramic	0.1 µF
C164	YWRVS1C470M	Electrolytic	47 µF 16V
C171	YWRVS1C220M	Electrolytic	22 µF 16V
C172	YW5CH270J5VB	Ceramic	27 pF
C180	YWT316B104MT	Ceramic	0.1 µF
C181	YWSK1E106MRD	Tantalum	10 µF 25V
C183	YWT316B104MT	Ceramic	0.1 µF
C185	YW5CH270J5VB	Ceramic	27 pF
C186,191	YWT316B104MT	Ceramic	0.1 µF
C192	YWRVS1C470M	Electrolytic	47 µF 16V
C193	YWT316B104MT	Ceramic	0.1 µF
C194,195	YW5CH330J5VB	Ceramic	33 pF
C196	YWT316B104MT	Ceramic	0.1 µF
C199	YW5CH680J5VB	Ceramic	68 pF
C200	YWT316B104MT	Ceramic	0.1 µF
C205	SK31A106KRB	Tantalum	10 µF 10V
C206	YWRVS0J470M	Electrolytic	47 µF 6.3V
C207,209	YWRVS1C100M	Electrolytic	10 µF 16V
C211	YWRVS1C470M	Electrolytic	47 µF 16V
C212	YW5X103K2VT	Ceramic	0.01 µF
C213	YWRVS1C100M	Electrolytic	10 µF 16V
C214	YW5F104Z2VB	Ceramic	0.1 µF
C215	YWRVS1C100M	Electrolytic	10 µF 16V
C219	YWRVS0J470M	Electrolytic	47 µF 6.3V
C220	YW5CH330J5VB	Ceramic	33 pF
C221	YW5X102K5VB	Ceramic	1000 pF
C222	YW5CH331J50B	Ceramic	330 pF
C223	YW5F104Z2VB	Ceramic	0.1 µF
C226	YWRVS1C470M	Electrolytic	47 µF 16V
C228	SK31A106KRB	Tantalum	10 µF 10V
C229,230	YWT316B104MT	Ceramic	0.1 µF
C231	SK21A476KRD	Tantalum	47 µF 10V
C232-235	YWT316B104MT	Ceramic	0.1 µF
C236	SK21A476KRD	Tantalum	47 µF 10V
C237,238	YWT316B104MT	Ceramic	0.1 µF
C239	SK31A106KRB	Tantalum	10 µF 10V
C240-242	YWT316B104MT	Ceramic	0.1 µF
C243	SK21A476KRD	Tantalum	47 µF 10V
C244	YWT316B104MT	Ceramic	0.1 µF
C246	YWT316B104MT	Ceramic	0.1 µF

REF. NO.	PART NO.	DESCRIPTION	
C248,249	YWRVS1HR47M	Electrolytic	0.47 µF 50V
C250	YW5X222K5VB	Ceramic	2200 pF
C251	YW5CH470J5VB	Ceramic	47 pF
C252	SK31A106KRB	Tantalum	10 µF 10V
C253	YW5CH510J5VB	Ceramic	51 pF
C254	YW5CH330J5VB	Ceramic	33 pF
C255	YW5CH101J5VB	Ceramic	100 pF
C256	YW5X103K2VB	Ceramic	0.01 µF
C257	YWRVS1H1R0M	Electrolytic	1 µF 50V
C258	YWRVS0J330M	Electrolytic	33 µF 6.3V
C259,260	ECEV0JA471	Electrolytic	470 µF 6.3V
C261	SK21A476KRD	Tantalum	47 µF 10V
C262	YW5CH561J5VB	Ceramic	560 pF
C264	SK31A106KRB	Tantalum	10 µF 10V
C266	YW5CH050C5VT	Ceramic	5 pF
C267	YW5X103K2VB	Ceramic	0.01 µF
C268	YW5CH220J5VB	Ceramic	22 pF
C269	YWRVS1E4R7M	Electrolytic	4.7 µF 25V
C270	YW5CH330J5VB	Ceramic	33 pF
C272	YWT316B104MT	Ceramic	0.1 µF
C273	SK21A476KRD	Electrolytic	47 µF 10V
C274	YWRVS1HR47M	Electrolytic	0.47 µF 50V
C304	YW5X103K2VT	Ceramic	0.01 µF
C305	YWRVS1C100M	Electrolytic	10 µF 16V
C306	YWRVS0J470M	Electrolytic	47 µF 6.3V
C308,310	YWRVS1C100M	Electrolytic	10 µF 16V
C311	YW5CH331J5VB	Ceramic	330 pF
C312	YW5F104Z2VB	Ceramic	0.1 µF
C315	YWRVS1C470M	Electrolytic	47 µF 16V
C317	YW5F104Z2VB	Ceramic	0.1 µF
C321	YWRVS1C100M	Electrolytic	10 µF 16V
C322	YWRVS0J470M	Electrolytic	47 µF 6.3V
C323	YW5CH330J5VB	Ceramic	33 pF
C324	YW5X102K5VB	Ceramic	1000 pF
C325	YWRVS1H1R0M	Electrolytic	1 µF 50V
C326	YWRVS0J330M	Electrolytic	33 µF 6.3V
C327,328	ECEV0JA471	Electrolytic	470 µF 6.3V
C329	YW5CH330J5VB	Ceramic	33 pF
C330	YW5CH101J5VB	Ceramic	100 pF
C331	YW5X103K2VB	Ceramic	0.01 µF
C332	SK31A106KRB	Tantalum	10 µF 10V
C333	YW5X222K5VB	Ceramic	2200 pF
C334	YW5CH470J5VB	Ceramic	47 pF
C335	YW5CH510J5VB	Ceramic	51 pF
C336	SK31A106KRB	Tantalum	10 µF 10V
C337,338	YWT316B104MT	Ceramic	0.1 µF
C339	SK21A476KRD	Tantalum	47 µF 10V
C340,341	YWT316B104MT	Ceramic	0.1 µF
C342	YWRVS1HR47M	Electrolytic	0.47 µF 50V
C343	SK21A476KRD	Tantalum	47 µF 10V

REF. NO.	PART NO.	DESCRIPTION	
C344,345	YWT316B104MT	Ceramic	0.1 µF
C346	SK31A106KRB	Tantalum	10 µF 10V
C347-349	YWT316B104MT	Ceramic	0.1 µF
C350	SK21A476KRD	Tantalum	47 µF 10V
C352,353	YWT316B104MT	Ceramic	0.1 µF
C355	YWRVS1HR47M	Electrolytic	0.47 µF 50V
C357	YW5CH561J5VB	Ceramic	560 pF
C361	YW5X103K2VB	Ceramic	0.01 µF
C362	YW5CH220J5VB	Ceramic	22 pF
C363	YWRVS1E4R7M	Electrolytic	4.7 µF 25V
C364	YW5CH330J5VB	Ceramic	33 pF
C366	SK21A476KRD	Tantalum	47 µF 10V
C367,368	YWT316B104MT	Ceramic	0.1 µF
C369	SK21A476KRD	Tantalum	47 µF 10V
C370	YWRVS1CHR47M	Electrolytic	0.47 µF 16V
C371	YWRVS1C470M	Electrolytic	47 µF 16V
C372	SK31A106KRB	Tantalum	10 µF 10V
C373	YWT316B104MT	Ceramic	0.1 µF
C375	YW5CH050C5VT	Ceramic	5 pF
C500-507	YWRVS1C100M	Electrolytic	10 µF 16V
C511	YWRVS1C470M	Electrolytic	47 µF 16V
C513,514	YWRVS1C100M	Electrolytic	10 µF 16V
C516,517	YWRVS1C100M	Electrolytic	10 µF 16V
C519,520	YWRVS1C100M	Electrolytic	10 µF 16V
C522-524	YWRVS1C100M	Electrolytic	10 µF 16V
C525	YWT316B104MT	Ceramic	0.1 µF
C526	YWRVS1C470M	Electrolytic	47 µF 16V
C527,528	YW5CH101J5VB	Ceramic	100 pF
C530	YW5CH330J5VB	Ceramic	33 pF
C531-533	YW5CH101J5VB	Ceramic	100 pF
C535	YW5CH330J5VB	Ceramic	33 pF
C536	YW5CH101J5VB	Ceramic	100 pF
C537	YWRVS1C100M	Electrolytic	10 µF 16V
C550-565	YW5CH101J5VB	Ceramic	100 pF
C566,567	YWRVS1C470M	Electrolytic	47 µF 16V
C600-604	YWT316B104MT	Ceramic	0.1 µF
C606-608	YWT316B104MT	Ceramic	0.1 µF
C610-613	YWT316B104MT	Ceramic	0.1 µF
C621	YW5CH330J5VB	Ceramic	33 pF
C622	YW5X103K2VB	Ceramic	0.01 µF
C623	YW5CH101J5VB	Ceramic	100 pF
C624	YW5CH150J5VB	Ceramic	15 pF
C625	YW5CH330J5VB	Ceramic	33 pF
C626	YW5X103K2VB	Ceramic	0.01 µF
C627	YW5CH101J5VB	Ceramic	100 pF
C628	YW5CH150J5VB	Ceramic	15 pF
C630,632	YWT316B104MT	Ceramic	0.1 µF
C701	YWMNA24F104P	Ceramic	0.1 µF
C702-710	YWMNA24A101P	Ceramic	100 pF
C711-714	ECEA0JKS331	Electrolytic	330 µF 6.3V

REF. NO.	PART NO.	DESCRIPTION	
C717	ECQV1H104JM	Plastic	0.1 µF
C780,781	YW5CH221J5VT	Ceramic	220 pF
C900	YWT316B104MT	Ceramic	0.1 µF
C903,904	YWRVS1C100M	Electrolytic	10 µF 16V
C906,907	YWRVS1C100M	Electrolytic	10 µF 16V
C910	YWT316B104MT	Ceramic	0.1 µF
C921	YW5X103K2VB	Ceramic	0.01 µF
C922	YW5CH270J5VB	Ceramic	27 pF
C924	YW5X103K2VB	Ceramic	0.01 µF
C925	YW5CH180J5VB	Ceramic	18 pF
C934	YWRVS1C100M	Electrolytic	10 µF 16V
C950-953	YWT316B104MT	Ceramic	0.1 µF
C963,966	YW5X103K2VB	Ceramic	0.01 µF
C980-982	YW5CH330J5VB	Ceramic	33 pF
C990	YWT316B104MT	Ceramic	0.1 µF
C996,997	YW5CH221J5VB	Ceramic	220 pF
L1	YWNL32220J	Coil	22 µH
L2,3	YWNL322R2J	Coil	2.2 µH
L6,7	YWNL32220J	Coil	22 µH
L9,10	YWNL321R0J	Coil	1 µH
L11,12	YWNL32220J	Coil	22 µH
L13	YWNL321R0J	Coil	1 µH
L15,16	YWNL32220J	Coil	22 µH
L18,20	YWNL32220J	Coil	22 µH
L21-24	YWNL32220J	Coil	22 µH
L28-31	YWNL32220J	Coil	22 µH
L36	YWNL32220J	Coil	22 µH
L38	YWNL32820J	Coil	82 µH
L40-42	YWNL32220J	Coil	22 µH
L43	YWNL32100J	Coil	10 µH
L48	YWNL32220J	Coil	22 µH
L50	YWNL25R47J	Coil	0.47 µH
L51	YWNL321R0J	Coil	1 µH
L52-54	YWNL32220J	Coil	22 µH
L61	YWNL321R0J	Coil	1 µH
L62	YWNL25R47J	Coil	0.47 µH
L63-66	YWNL321R0J	Coil	1 µH
L67	YWNL32100J	Coil	10 µH
L68	YWNL32220J	Coil	22 µH
L70	YWNL321R0J	Coil	1 µH
L71,72	YW5206JPS105	Coil	
L73-75	YWBLM21A05PT	Coil	
L76,81	YWNL32220J	Coil	22 µH
L85,86	YWNL32220J	Coil	22 µH
L99	YWNL321R0J	Coil	1 µH
L100,106	YWNL32220J	Coil	22 µH
L140,141	YWNL32220J	Coil	22 µH
L300,400	YWNL321R0J	Coil	1 µH
L505	YWNL321R0J	Coil	1 µH
L511,512	YWNL25560J	Coil	56 µH

REF. NO.	PART NO.	DESCRIPTION	
L513	YWNL321R0J	Coil	1 µH
L514,515	YWNL25560J	Coil	56 µH
L516	YWNL321R0J	Coil	1 µH
L905,909	YWN5206JPS105	Coil	
L920,928	YWNL251R0J	Coil	1 µH
L929	YWN5206JPS104	Coil	
X1	YWCSACS24R57MX	Oscillator	
X2,3	YWUM1J70R950	Crystal Oscillator	
X5	YWDX17R734	Crystal Oscillator	
X9	YWUM1J34R506	Crystal Oscillator	
CF5	YW4FT7127	Filter	
CF6	YW4FT7021	Filter	
CF7	YW4FT7127	Filter	
CF8	YW4FT7021	Filter	
CF10	YW4FW8052	LC Filter	
CF11	YW4FW8053	LC Filter	
CF12	YW4FW8052	LC Filter	
CF13	YW4FW8053	LC Filter	
CN1	YW526103090	30-pin Connector	
CN3	YW526100890	8-pin Connector	
CN4	YW533981090	10-pin Connector	
TP2-4	YWRCT2125TPV	Test- Pin	
TP6-11	YWRCT2125TPV	Test- Pin	
TP15-18	YWRCT2125TPV	Test- Pin	
TP20,21	YWRCT2125TPV	Test- Pin	
M25	YWV2HB2011A1	Shield Case	
M26	YWV2HA2012A2	Bottom Shield Case	
M27	YWV2HC2013A1	Upper Shield Cover	
M28	YWB0151	Rear Panel	

ACCESSORY PARTS/PACKAGING PARTS

M41 ⚠	YW7J1A015A	Operating Instructions
M45	XZB26X40C05	Polyethylene Bag
M46	XZB50X63C05	Polyethylene Bag
M47	YWT25X60X3	Polyethylene Bag for Power Cord
M50	YWV9CE3051AN	Packaging Assy for WJ-MX20/B

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H-003 Ⓝ 12, 23

7885
8502

ORDER NO. BSD9801019P8

Parts Change Notice

Subject : Correction

Model No. WJ-AVE55/WJ-MX20

Effective From : Serial No. ALL

Please revise the original parts list in the Service Manual to conform to the change(s) shown herein.
If new part numbers are shown, be sure to use them when ordering parts.

Reason for Change	+ The circled item indicates the reason.
1. Improve performance	
2. Change of material or dimension	
3. To meet approved specification	
4. Standardization	
5. Addition	
6. Deletion	
⑦ Correction	
8. Other	

Interchangeability Code	++ The circled item indicates the interchangeability. If no marking, see the Notes in the bottom column.
Parts / Set Production	
A Original → Early, New → Late	Original or new parts may be used in early or late production set. Use original parts until exhausted, then stock new parts.
B Original → Early, New → Late	Original parts may be used in early production sets only. New parts may be used in early or late production sets. Use original parts where possible, then stock new parts.
Ⓒ Original → Early, New → Late	New parts only may be used in early or late production sets. Stock new parts.
D Original → Early, New → Late	Original parts may be used in early production sets only. New parts may be used in late production sets only. Stock both original and new parts.
E Other	

Part Number Parts identified by ▮ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts. Parts identified by o mark are new parts used from this Parts Change Notice.

Ref No.	Original Part No.	New Part No.	Notes (+, ++)	Part Name & Descriptions	Price
MAIN BOARD					
IC13	YWNJM2267M	YWNJM2267VT1	7, C	IC	

File this Parts Change Notice with your copy of the Service Manual.

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PSD2

ORDER NO. BSD9901053P8

Parts Change Notice

Subject : Correction of Service Manual

Model No. WJ-MX20

Effective From : Serial No. ALL

Please revise the original parts list in the Service Manual to conform to the change(s) shown herein.
If new part numbers are shown, be sure to use them when ordering parts.

Reason for Change	+ The circled item indicates the reason. If no marking, see the Notes in the bottom column.
1. Improve performance	
2. Change of material or dimension	
3. To meet approved specification	
4. Standardization	
5. Addition	
6. Deletion	
(7) Correction	
8. Other	

Interchangeability Code	++ The circled item indicates the interchangeability. If no marking, see the Notes in the bottom column.
Parts / Set Production	
A Original → Early, New → Late	Original or new parts may be used in early or late production set. Use original parts until exhausted, then stock new parts.
B Original → Early, New → Late	Original parts may be used in early production sets only. New parts may be used in early or late production sets. Use original parts where possible, then stock new parts.
C Original → Early, New → Late	New parts only may be used in early or late production sets. Stock new parts.
D Original → Early, New → Late	Original parts may be used in early production sets only. New parts may be used in late production sets only. Stock both original and new parts.
(E) Other	

Part Number Parts identified by ▮ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts. Parts identified by o mark are new parts used from this Parts Change Notice.

Ref No.	Original Part No.	New Part No.	Notes (+, ++)	Part Name & Descriptions	Price
MAIN BOARD					
PCB5 (RTL)	YWJMX20PKZ1A	YWJMX20EKZ1A	7, E	Main Board Ass'y	

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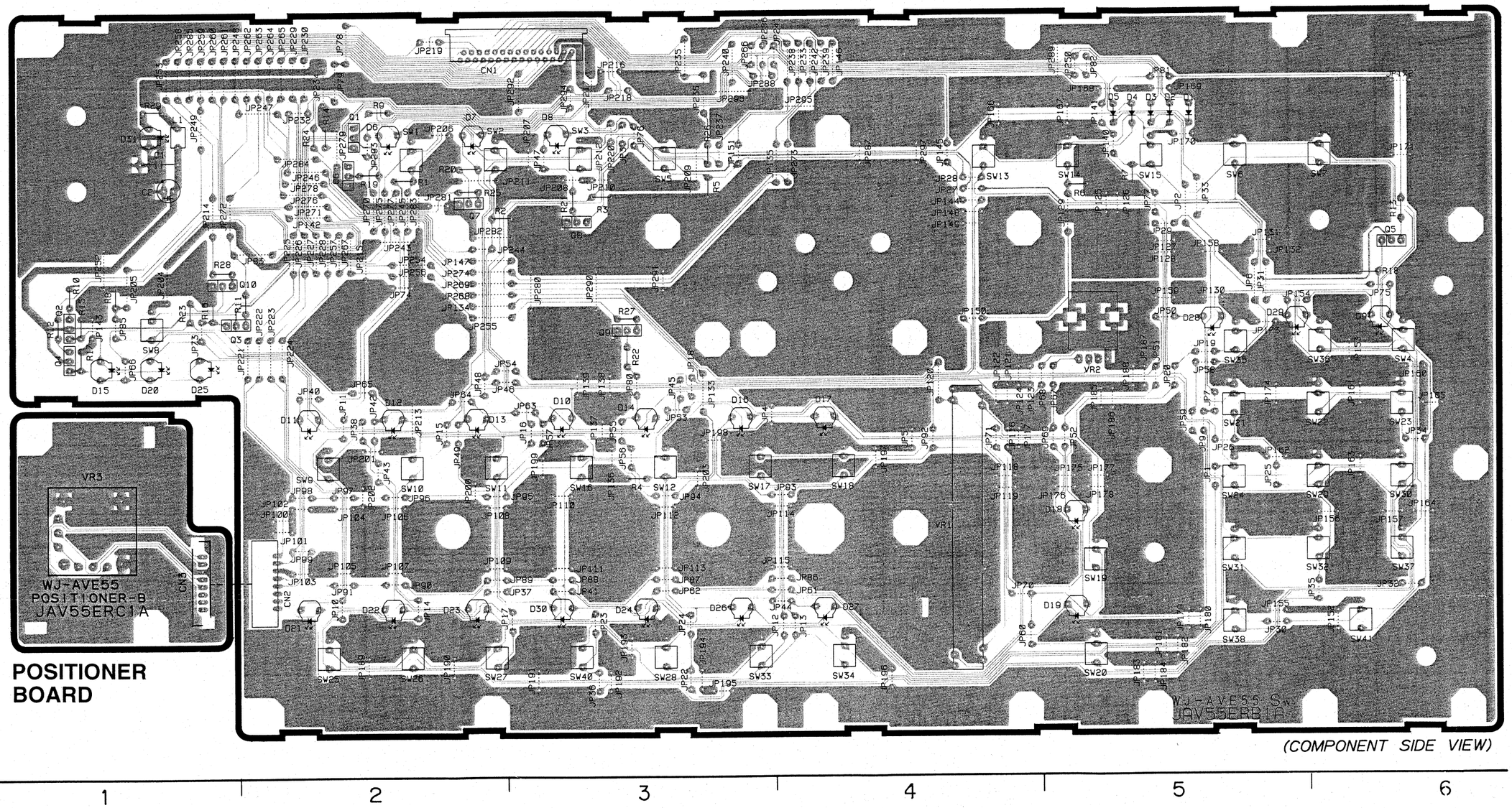
CONDUCTOR VIEW OF SWITCH BOARD

SWITCH BOARD

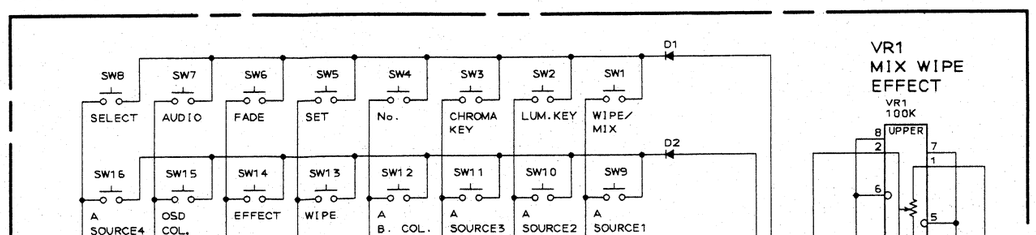


<Index>
SWITCH BOARD

Q1	C2
Q2	B1
Q3	B1
Q4	B1
Q5	B6
Q6	C2
Q7	C2
Q8	C3
Q9	B3
Q10	B1
D1	C5
D2	C5
D3	C5
D4	C5
D5	C5
D6	C2
D7	C2
D8	C3
D9	B6
D10	B3
D11	B2
D12	B2
D13	B2
D14	B3
D15	B1
D16	B3
D17	B4
D18	A5
D19	A5
D20	B1
D21	A2
D22	A2
D23	A2
D24	A3
D25	B1
D26	A3
D27	A4
D28	B5
D29	B5
D30	A3
D31	C1

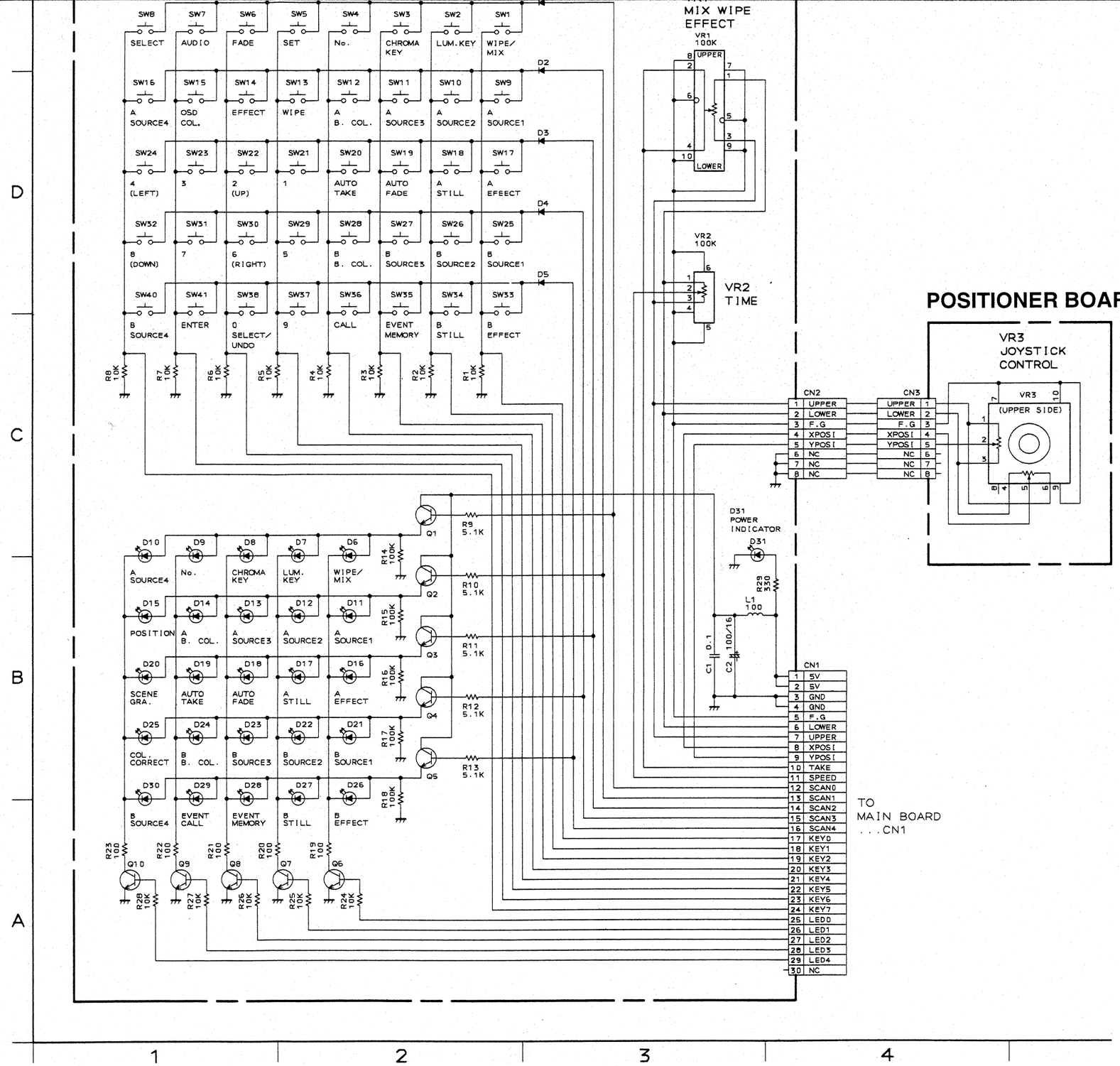
SCHEMATIC DIAGRAM OF SWITCH BOARD

SWITCH BOARD



SWITCH BOARD

	B	C	E
Q1	0.7	4.9	0.8
2	0.7	4.9	0.8
3	0.8	5	0.9
4	0.8	4.9	0.9
5	0.8	4.9	0.9
6	0.3	1.6	0



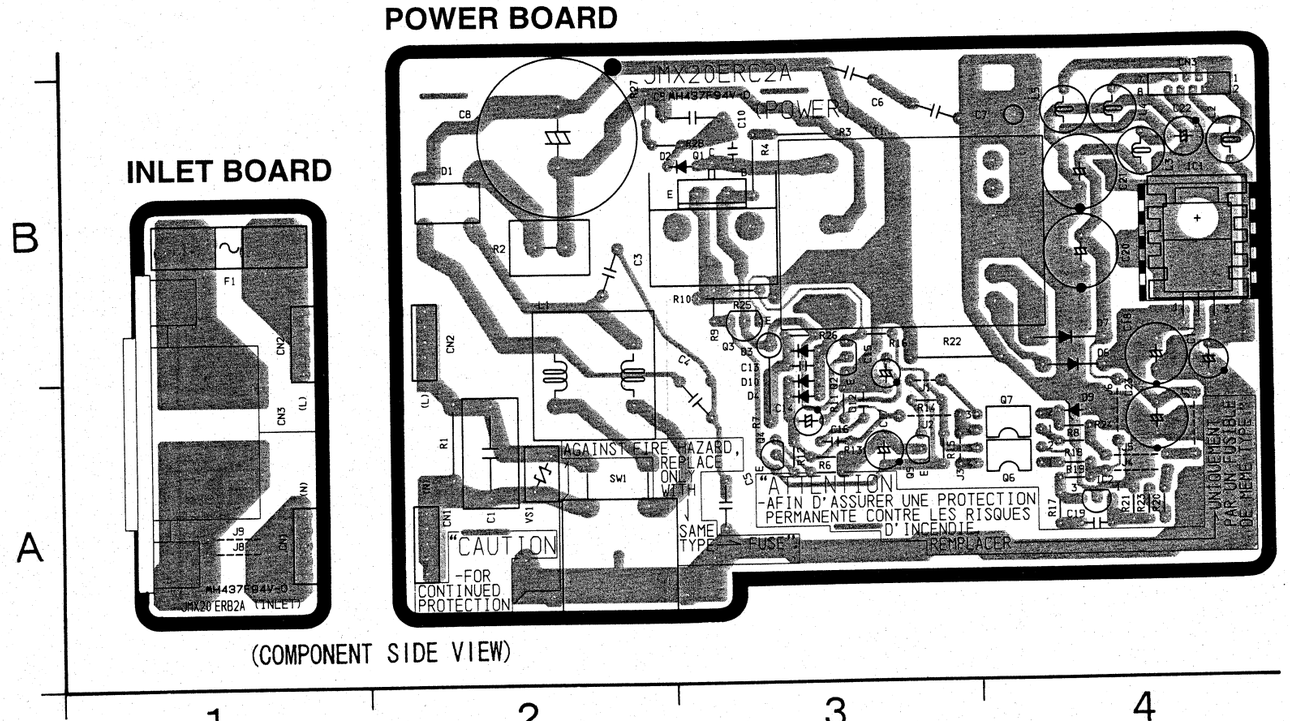
Q1	0.7	4.9	0.8
2	0.7	4.9	0.8
3	0.8	5	0.9
4	0.8	4.9	0.9
5	0.8	4.9	0.9
6	0.3	1.6	0
7	0.1	2.1	0
8	0	2.6	0
9	0	2.6	0
10	0.1	2.1	0

<Index>

SWITCH BOARD

Q1	C2
Q2	B2
Q3	B2
Q4	B2
Q5	B2
Q6	A2
Q7	A2
Q8	A1
Q9	A1
Q10	A1
D1	E3
D2	E3
D3	D3
D4	D3
D5	D3
D6	C2
D7	C2
D8	C1
D9	C1
D10	C1
D11	B2
D12	B2
D13	B1
D14	B1
D15	B1
D16	B2
D17	B2
D18	B1
D19	B1
D20	B1
D21	B2
D22	B2
D23	B1
D24	B1
D25	B1
D26	B2
D27	B2
D28	B1
D29	B1
D30	B1
D31	C3

CONDUCTOR VIEW OF POWER BOARD



<index>
POWER BOARD

IC1	B4
IC4	A4
Q1	B3
Q2	B3
Q3	B3
Q4	A3
Q5	A3
Q6	A4
Q7	A4
D1	B2
D2	B3
D3	B3
D4	A3
D6	B4
D7	B4
D9	A4
D10	A3

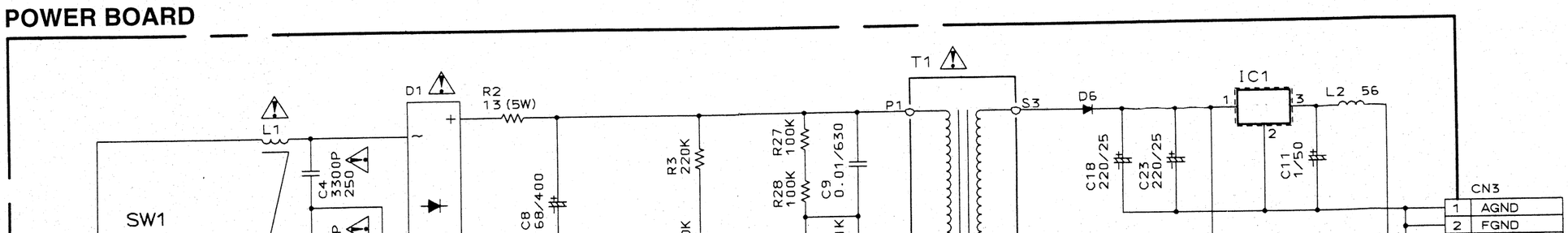
POWER BOARD

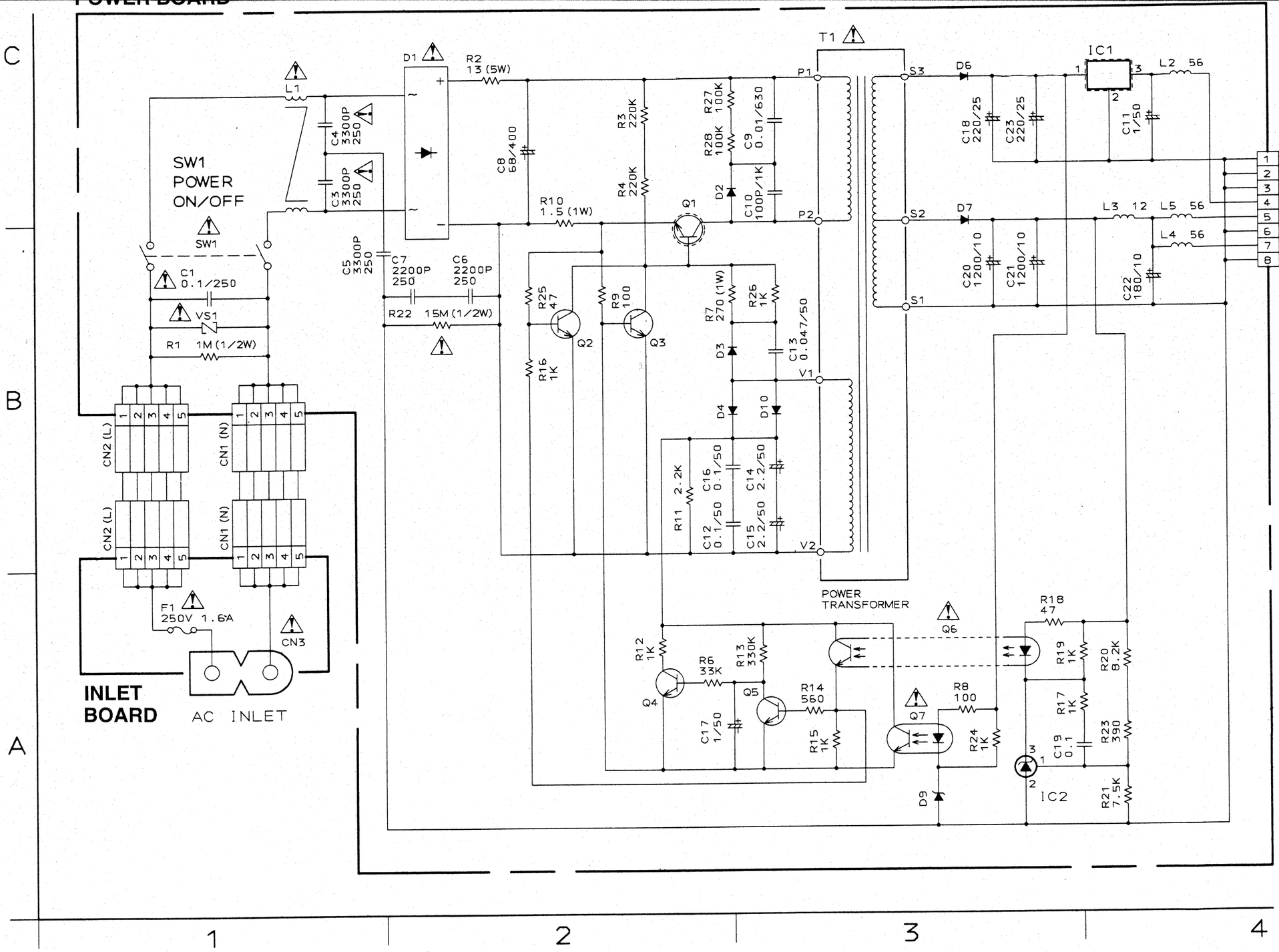
	IC1	IC2
Pin 1	14.2	2.4
2	0	0
3	11.9	3.9

	B	C	E
Q1	0	0.5	0
2	0	0	0
3	0	0	0
4	0	3.9	0
5	0	0	0

	Q6	Q7
Pin 1	5.0	14.2
2	3.9	14.2
3	0	0
4	0	3.9

SCHEMATIC DIAGRAM OF POWER BOARD





<index>
POWER BOARD

IC1	C4
IC4	A3
Q1	B2
Q2	B2
Q3	B2
Q4	A2
Q5	A3
Q6	A3
Q7	A3
D1	C2
D2	C3
D3	B3
D4	B3
D6	C3
D7	C3
D9	A3
D10	B3

Important safety notice

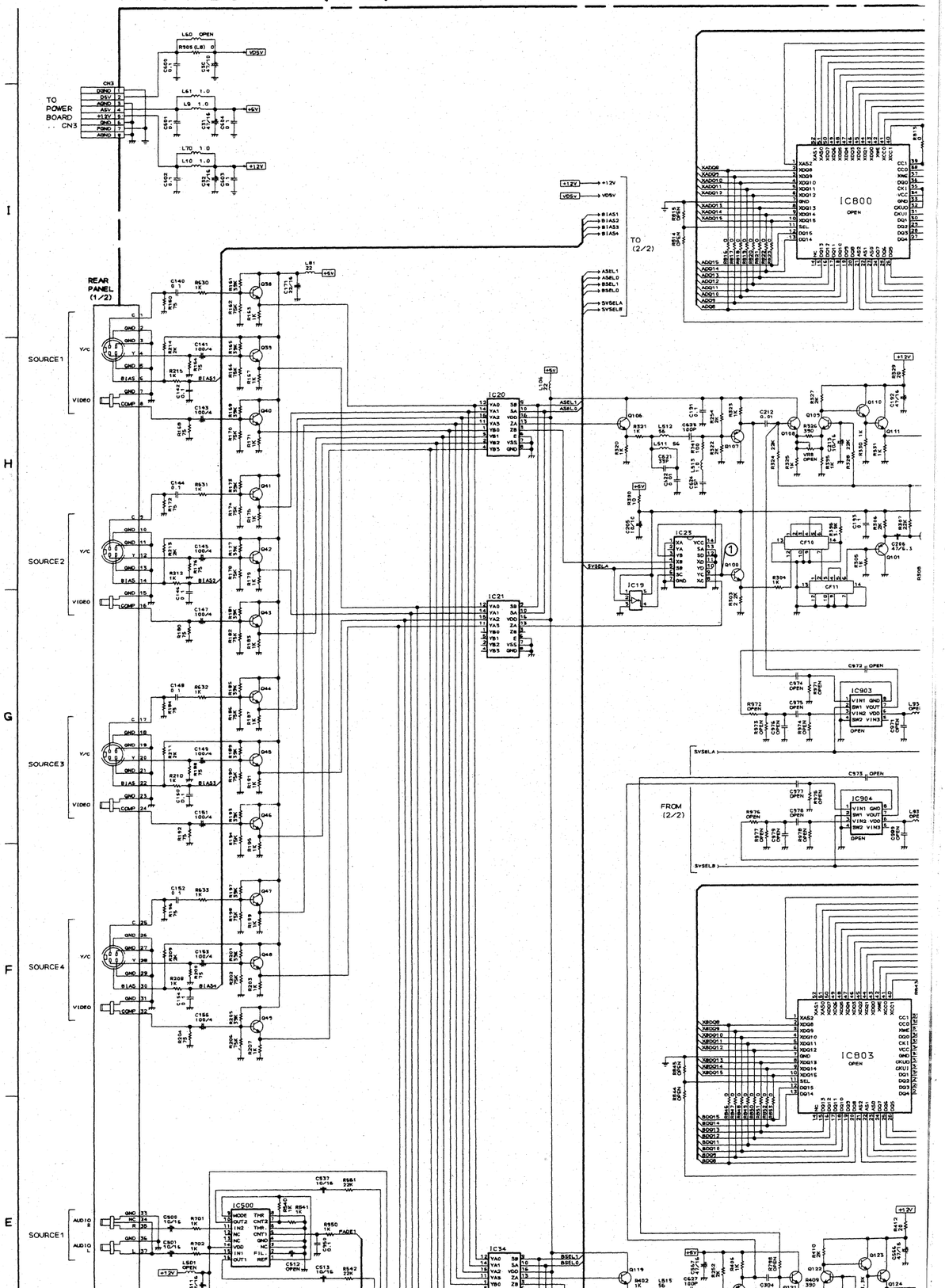
Components Identified by " ⚠ " mark have special characteristics for safety.
When replacing any of these components, use only manufacturer's specified parts.

<Index>

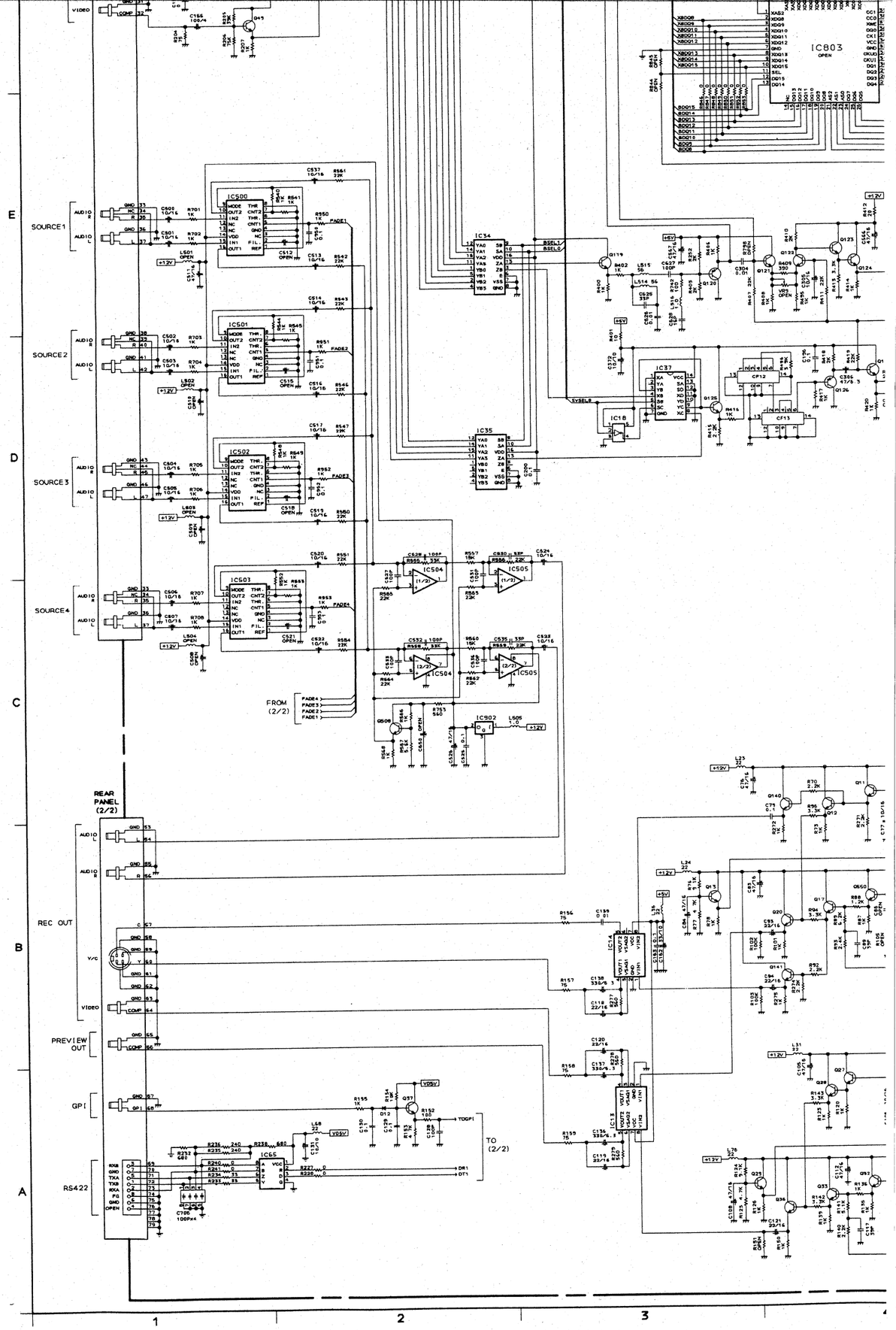
MAIN BOARD (1/2)

IC12	A7	Q31	A4
IC13	A3	Q32	A4
IC14	B3	Q33	A4
IC18	D3	Q36	A4
IC19	G3	Q37	A2
IC20	H2	Q38	I1
IC21	G2	Q39	H1
IC23	H3	Q40	H1
IC25	H6	Q41	H1
IC26	G6	Q42	H1
IC28	G7	Q43	G1
IC29	H7	Q44	G1
IC30	I7	Q45	G1
IC31	I6	Q46	G1
IC33	I6	Q47	F1
IC34	E2	Q48	F1
IC35	D2	Q49	F1
IC37	D3	Q100	H3
IC39	E6	Q101	H4
IC40	D6	Q102	H4
IC42	C7	Q103	H4
IC43	E7	Q104	H4
IC44	E6	Q105	H5
IC46	F7	Q106	H3
IC47	I6	Q107	H3
IC48	C9	Q108	H4
IC49	C9	Q109	H4
IC50	F6	Q110	H4
IC51	F6	Q111	H4
IC52	B6	Q113	H5
IC55	B6	Q114	H5
IC56	A6	Q115	H5
IC58	A7	Q116	J6
IC59	B8	Q117	I6
IC62	B7	Q118	G6
IC64	B9	Q119	E3
IC65	A1	Q120	E3
IC100	A7	Q121	E4
IC101	A7	Q122	E4
IC500	E1	Q123	E4
IC501	D1	Q124	E4
IC502	D1	Q125	D3
IC503	C1	Q126	D4
IC504	C2	Q127	D4
IC505	C2	Q128	D4
IC511	I6	Q129	D4
IC512	F6	Q130	D5
IC513	B8	Q131	D5
IC900	I5	Q132	D5
IC901	F5	Q133	D5
IC902	C2	Q135	E5
		Q136	F6

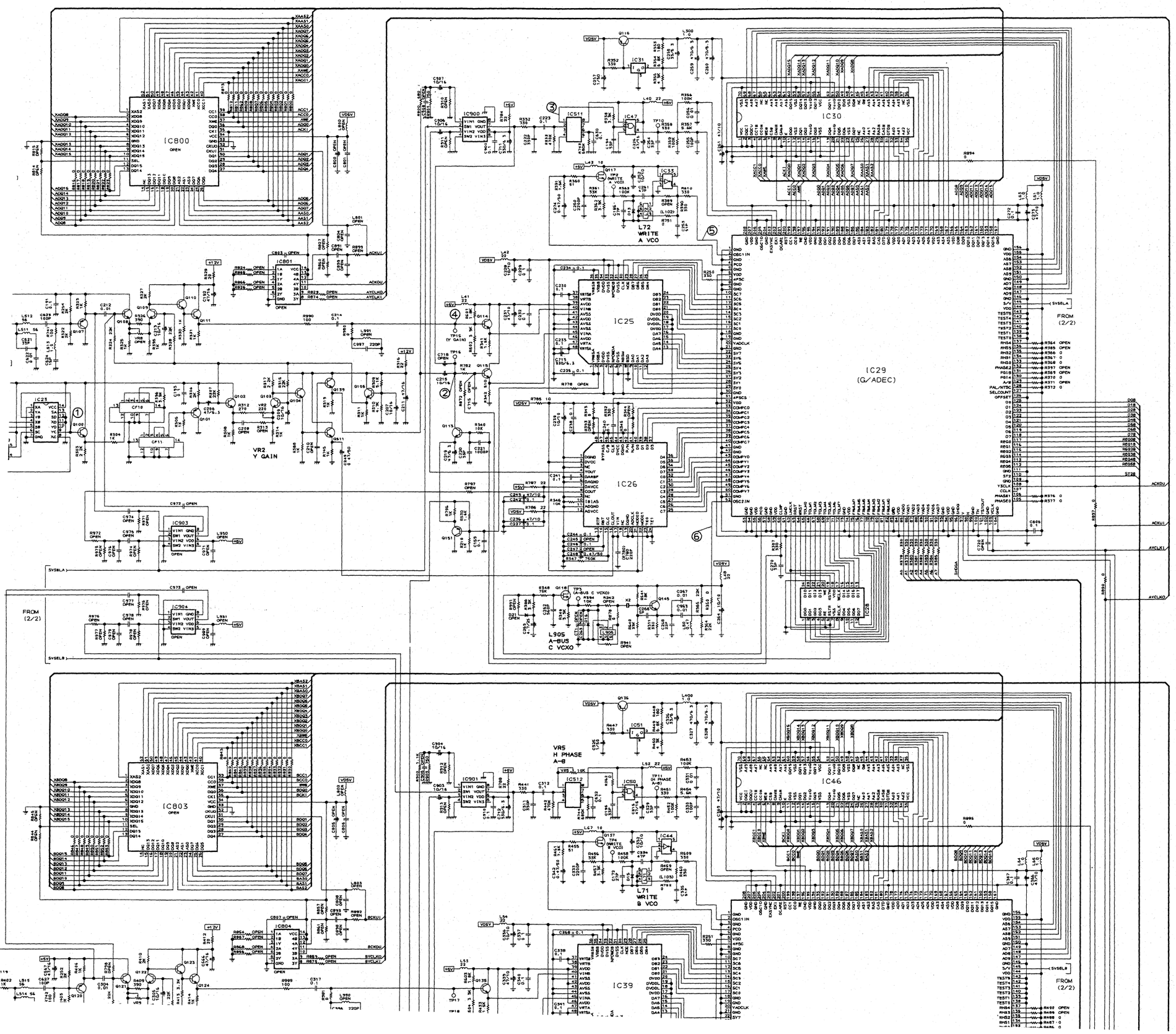
MAIN BOARD (1/2)

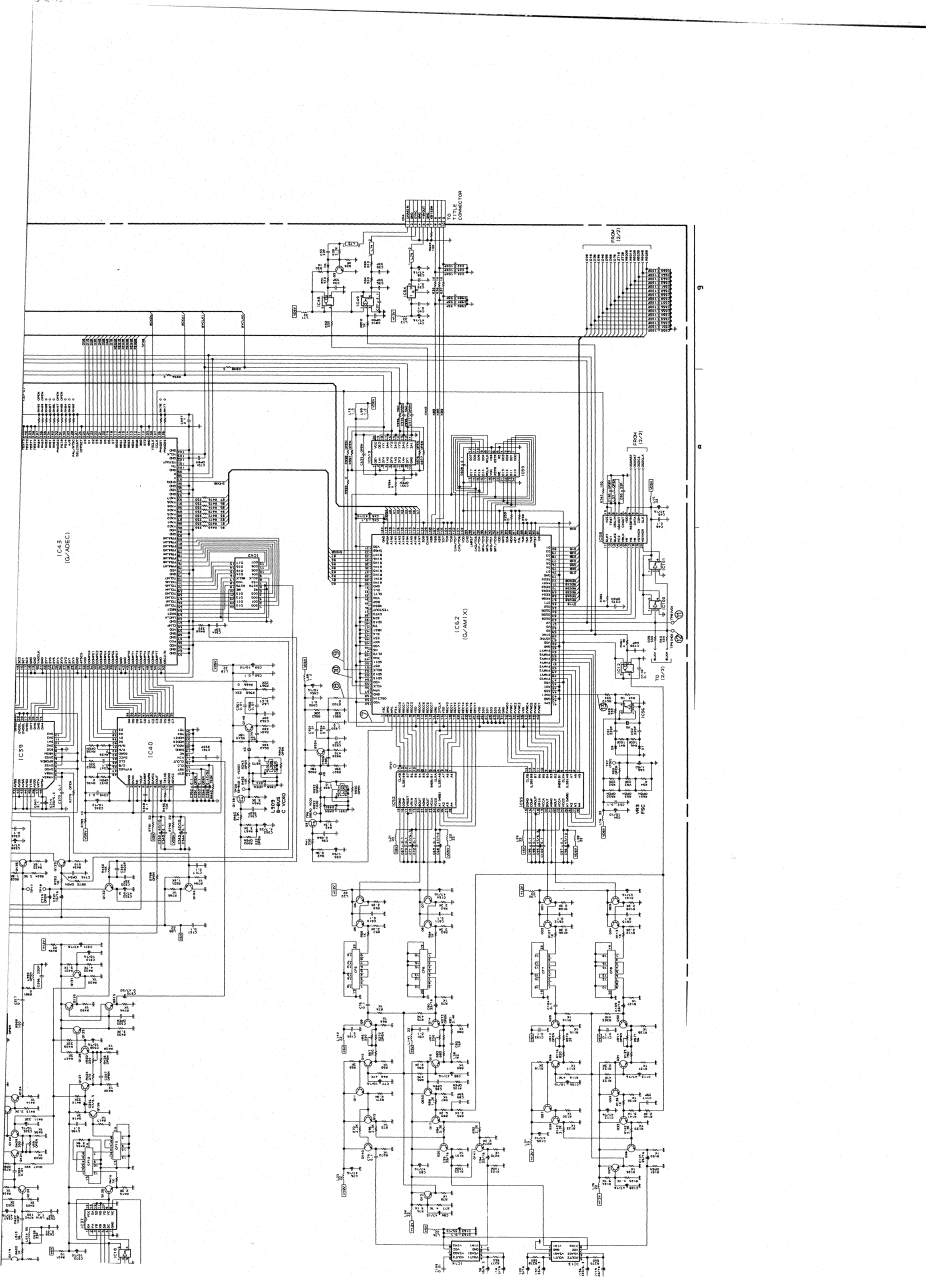


IC100	A7	Q121	E4
IC101	A7	Q122	E4
IC500	E1	Q123	E4
IC501	D1	Q124	E4
IC502	D1	Q125	D3
IC503	C1	Q126	D4
IC504	C2	Q127	D4
IC505	C2	Q128	D4
IC511	I6	Q129	D4
IC512	F6	Q130	D5
IC513	B8	Q131	D5
IC900	I5	Q132	D5
IC901	F5	Q133	D5
IC902	C2	Q135	E5
		Q136	F6
Q2	C9	Q137	E6
Q3	C6	Q138	C6
Q5	C5	Q139	H5
Q6	C5	Q140	C4
Q7	B5	Q141	B4
Q8	B5	Q145	G6
Q9	C4	Q146	C6
Q10	C4	Q150	D5
Q11	C4	Q151	G5
Q12	C4	Q508	C2
Q13	B3	Q511	H5
Q14	B4	Q513	D5
Q15	B4	Q550	B4
Q17	B4	Q924	C6
Q20	B4		
Q21	A5	D4	C9
Q22	A5	D7	A6
Q23	A5	D8	A6
Q24	A5	D12	A2
Q25	A4	D13	I6
Q26	A4	D14	C6
Q27	A4	D15	E6
Q28	A4	D16	G6
Q29	A3	D930	C6
Q30	A4		



RAM OF MAIN BOARD (1/2)




[C43
(G/ADEC)
IC39
IC40
IC42
IC37
IC16
[C62
(G/AMIX)
IC48
IC49
IC64
IC58
IC59
IC52
IC55
IC56
IC60
IC61
IC74
IC73
L909
B-BUS
C VCXO
TO
TITLE
CONNECTOR
FROM
(2/2)
TO
(2/2)
VR3
FSC
TP(AUD)
TP(VID)
8
9
10
11
12